LET US ENCOMPASS THE EARTH WITH A NEW ORDER OF TIME

VOL. X FIRST QUARTER 1940 No. 1

ON April 14, the Pan American Union celebrates its Golden Anniversary! The people of the 21 republics of the Western Hemisphere, which form its official entity, can look back gratefully on half a century of closer cooperation among themselves, increased American commerce and strengthened intellectual and cultural ties. President Roosevelt in proclaiming April 14 Pan American Day said: "It is most appropriate that the people of the United States should commemorate this significant occasion and thereby testify to the close bonds of friendship that unite the Government and people of the United States with those of the other republics of the American Continent."

Calendar reformers may be permitted pardonable pride in the Union's achievement, since many nations which comprise it have long been in the vanguard of the movement for calendar simplification. The Government of Chile in 1937 assumed an energetic leadership for calendar improvement. It received the unanimous approval of the League of Nations' Council to submit a draft convention on The World Calendar to States Members of the League and non-member States. Other republics of Latin America were not long in following Chile's lead, so that among the 14 nations which have approved The World Calendar are to be found Brazil, Mexico, Panama, Peru and Uruguay—six Pan American states.

We have, however, a more personal and compelling reason for sharing in the joy of the Union's achievement. Dr. L. S. Rowe, for many years its guiding spirit, has long been an enthusiastic calendar reformer. He has been a member of The World Calendar Association since its early beginning, and for the past five years Honorary President of the Comite Latino-Americano del Calendario Mundial, the committee which coordinates the activities of national calendar reform organizations in Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Mexico, Panama, Paraguay, Peru, Uruguay and Venezuela.

The membership of The World Calendar Association joins with the calendar reform organizations of the Americas in heartily wishing Dr. Rowe and the Pan American Union increasing success in their Inter-American friendship, peace and understanding.

Journal of
CALENDAR REFORM

January, February, March
1940

Editorial: Pan American Union		1
Calendars in the Sky	James Stokley	3
Uniform Government Records	James L. C. Ford	8
Advisory Committee		11
World Conference	Abbé Chauve-Bertrand	12
Weekdays in The World Calendar	Elisabeth Achelis	14
Historical Calendar Misconceptions	Charles C. Sutter	16
Mayan Time Measures	Clifford N. Anderson	17
The World Calendar Speaks	Robert P. Shaw	23
Vagaries of Easter		25
Contenders for Time's Honors	Fred Winslow Adams	26
The Camera and the Calendar	Sophie Delar	35
200 Years in Russia	Dr. Vera Rossovskaja	38
Obituary Notes		42
Editorial Departments		43

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CALENDARS IN THE SKY

By James Stokley

Director, Buhl Planetarium, Pittsburgh

(From *Sky*, January, 1940)

THOUGH at this time, the beginning of the year, the existence of the calendar is called to our attention, most of us are inclined to take it for granted, as we do so many useful institutions. The fact that the year 1940 is just beginning seems as natural as that a stone falls to the ground when dropped.

But we must remember that there are many different calendars in use today in other parts of the world. Among the Jews, for instance, this is not 1940, but 5700. Their new year will not arrive until October 2. To the Mohammedans, this is the year 1358, until February 9, when 1359 commences. In the Japanese era, this is 2600, which began on January 1.

If we consider calendars not used today, but of great historical interest, we find that in the Roman calendar this month marks the beginning, on January 14 of the year 2693 A.U.C. The letters stand for *ab urbe condita* or "from the founding of the city." In the era of Nabonassar, used by the Babylonians, the year is almost the same, for 2689 will start on May 8. According to the ancient Greek calendar, the year 2252 will start on March 21, the day of the beginning of spring.

This shows how many different schemes man has tried in counting his days. The fact that even today further changes are being urged by large and distinguished groups makes it clear that despite this long period of evolution, our calendar is still imperfect. As a matter of fact, a really perfect calendar is impossible. It has to be a compromise, for it attempts to reconcile natural periods which are not reconcilable. The greatest accuracy combined with greatest convenience—these are the things to be desired.

The day is not long enough to indicate conveniently large intervals of time, and thus arises the need for longer units, such as the month and the year. Most of our measures use arbitrary units, which are chosen to be commensurable—an even number of the smaller ones are contained in the larger, such as 100 cents in a dollar, 12 inches in a foot or 16 ounces in a pound. With the small units of time, the hour, minute and second, also arbitrary, this is the case, but the longer units are determined naturally. The day is the time it takes the earth to turn on its axis; the month, originally, was the time taken for the moon to go around the earth; while the year is the interval during which the earth makes a trip around the sun. It happens that these units are all incommensurable, that is, it is impossible to express one precisely in terms of the other, no matter how complicated a fraction we use. Consequently, we must try to make them fit as closely

as possible and without using some impracticable proceeding to do it.

Primitive man, not able to count very high numbers, found the changing phases of the moon useful to indicate long periods of time. Later, the changes in the sun's daily path were recognized as keeping step with the seasons, and these were used for a calendar. Thus, there are three distinct types of calendar: the lunar, which keeps step with the moon and disregards the sun and seasons; the solar, which is in step with the seasons, but ignores the moon; and the luni-solar, which combines the other two. All three types are in use today among various peoples.

Of the many different kinds of months, two can be shown in a planetarium. The *sidereal month* is the time that the moon takes to travel around the sky from one position among the stars back to that position. This is about 27 1/3 days. But, when a sidereal month has passed, the moon is not at the same phase that it was at the start. The phases depend on the position of the moon with respect to the sun, which is also, apparently, moving eastward among the stars. For example, the moon will be at first quarter on January 17, while it is in the constellation of Pisces, the Fishes. Then, as always when in this phase, it will be a quarter of the way around the sky from the sun, towards the east. One sidereal month later, on February 14, it will be in that part of the sky again. But during that interval, the sun has moved to the east by nearly a twelfth of the distance around the sky, and the moon is therefore nearer to it and in a crescent phase. Not until February 16 will it be at first quarter again. This is a little over 29½ days after it had that phase previously, a period which is called the *synodic month,* and is well known, because the phases of the moon are so obvious, and because the tides keep in step with it.

Most old calendars, and the Mohammedan among present-day ones, are based on the synodic month. The Mohammedans have 12 months each year, alternately 29 and 30 days long, giving a year of 354 days. This calendar loses 11 days per year, or one year every 33. When a Mohammedan says that he is 68 years old, it means that he has seen only 66 summers. This calendar does not keep in step with the seasons, but in most Moslem countries there is little seasonal variation, so this is not important. The calendar starts with the Hegira, when Mohammed fled from Mecca in 622 A.D.

Just as there are two different kinds of month, so are there two principal kinds of year, the *sidereal* and the *tropical.* The first is the time it takes the earth to complete a trip around the sun, or the time it apparently takes the sun to travel from one position among the stars back to the same position. This is roughly 365¼ days, or, more accurately, 365 days, 6 hours, 9 minutes and 9.5 seconds. But the seasons are determined by the sun's position with respect to the equator. When, on its northward journey, it crosses the celestial equator, spring commences. This is the vernal

equinox. But the entire starry sky slips around the sun's path, the ecliptic, once every 25,800 years because of the precession of the equinoxes. Thus, the vernal equinox moves forward each year to meet the sun, which reaches that point 21 minutes, 13.5 seconds before it has made a complete circuit of the sky. The period that the sun requires to travel from the vernal equinox back to it again is called the tropical year, and is 365 days, 5 hours, 48 minutes, 46 seconds long. This is what most of us mean when we refer to the year, although the ancient Egyptians used the sidereal year in their calendar.

Their year began originally when the sun had moved far enough to the east of Sirius, the Dog Star, for that star to be seen above the eastern horizon just before sunrise. About 2776 B.C., this happened to come a few days before the annual flood of the Nile, an event upon which their activities depended, and which they could not predict by any other means. There is little seasonal change in Egypt, and the floods are caused by the melting of snows in mountains far to the south, of which the Egyptians had no knowledge. They divided their year into 12 months of 30 days each, and added five extra days at the end. However, this did not take care of the extra fraction of nearly a quarter of a day, and so, four years after the calendar was adopted, the rising of Sirius just before the sun came a day later, according to their calendar. After 1460 years, called a Sothic period (after Sothis, their name for Sirius), their dates had slipped completely around the seasons.

The Jewish calendar, like the ecclesiastical calendar of the Christian Church, combines the lunar and solar calendars. That of the Jews has 12 months each year, alternately 29 and 30 days in length, so that the months keep step with the moon. To keep in step with the sun, a "leap" or "intercalary" month is added, usually every third year. In 19 years there are seven of these leap years with extra months. This calendar begins with the supposed date of Creation, 3761 B.C.

The original Roman calendar was of this sort, but the Romans had no regular rules for the extra months, and the calendar became a source of political intrigue and was much abused. About 50 B.C., the vernal equinox came in December. To correct these evils, and to prevent their repetition, Julius Caesar, in 45 B.C., introduced the Julian calendar, with the advice of the astronomer Sosigenes. His principal changes were: (1) A year of 445 days, often referred to as "the year of confusion," was observed, to bring the equinox back to March 25. (2) The length of the year was set at 365¼ days, as accurately as it could be determined at that date. (3) The moon was disregarded entirely. Ten days were added. January, Sextilis (August) and December received two days, April, June, September and November one only. February retained its 28 days. The months thus became the same as we have them today. (4) To account for the extra

quarter of a day, an intercalary day was observed every fourth year, being added to February, to make that month 29 days long.

Unfortunately, Julius Caesar did not live to see his calendar safely started on its course. He was assassinated in B.C. 44 and the Roman Senate honored his memory by calling Quintilis, Julius, or as we now say July. His successor, Augustus Caesar, corrected some errors made by the pontiffs in carrying out the Julian calendar. The Roman Senate took the opportunity of perpetuating Augustus' name by changing the month, Sextilis, to August.

Such was the calendar used, in some parts of the world, until a few years ago. But the Julian year of 365 days, 6 hours, is about 11 minutes, 14 seconds too long. By 1582 this difference had accumulated to a total of about 10 days, and the equinox came on March 11. Had this continued, it would have meant that Easter, and other religious festivals connected with it, would eventually have come in winter, so Pope Gregory XIII made another reform, with the aid of the astronomer Christopher Clavius. This was ordered in a Papal Bull dated February 24, 1582. It provided principally that: (1) The day after October 4, 1582, should be called October 15, thus dropping 10 days completely, and bringing the date of the vernal equinox back to the 21st of March, where it had been around 325 A.D., the date of the Council of Nicaea, which had set the rules for determining Easter. (2) Instead of having a leap year every fourth year without exception, century years would only be leap years if divisible by 400. (Thus 1900 was not a leap year, but 2000 will be one, as was 1600. As in the Julian calendar, other years would be leap years if divisible by four.)

This makes the average length of the Gregorian year 365 days, 5 hours, 49 minutes, 12 seconds—only 26 seconds too long. It was adopted in Roman Catholic countries immediately, but others lagged. Not until 1752 was it adopted in England, while Russia did not adopt it until 1918.

So far another unit, the week, has not been mentioned. This corresponds to no natural unit of time, but is of astrological, rather than astronomical, origin, being based on the old belief in a supposed relationship between planets and their positions and terrestrial affairs. The Babylonians recognized seven "planets," all supposedly revolving around the earth. In order of distance, starting with the most remote, they were Saturn, Jupiter, Mars, Sun, Venus, Mercury, and the Moon. They thought that each hour of each day was ruled by one of them. Thus Saturn was first, Jupiter second, and so on. Then it started over, with Saturn ruling the eighth hour, Jupiter the ninth, and so on, to the end of the day, with Mars for the 24th hour. This then brought the sun to the first hour of the second day, and again the list went around more than three times. That day ended with Mercury and the next started with the moon. The fourth day started with Mars, the fifth with Mercury, the sixth with Jupiter and the seventh

with Venus. The first hour of the eighth day began with Saturn again, so the cycle started over. As each day was supposed to be particularly under the control of the planet ruling the first hour, the days were named after it. These names were transmitted through the Jews and the Romans into Europe, and through the Saxons into England. The following table shows the similarity of the names in various languages.

Celestial Body	*Latin*	*Saxon*	*English*	*French*	*German*
Sun	Dies Solis	Sunnan-daeg	Sunday	Dimanche	Sonntag
Moon	Dies Lunae	Monan-daeg	Monday	Lundi	Montag
Mars	Dies Martis	Tiwes-daeg	Tuesday	Mardi	Dienstag
Mercury	Dies Mercurii	Wodens-daeg	Wednesday	Mercredi	Mittwoche
Jupiter	Dies Jovis	Thors-daeg	Thursday	Jeudi	Donnerstag
Venus	Dies Veneris	Frigas-daeg	Friday	Vendredi	Freitag
Saturn	Dies Saturni	Saeter-daeg	Saturday	Samedi	Samstag

(Tiw, Woden, Thor and Friga were Saxon gods, corresponding to Mars, Mercury, Jupiter and Venus in the Roman mythology.)

At present, the slight remaining error in the Gregorian calendar now has accumulated to about three hours. Not until after 3000 years have passed will it amount to a day, so it is not very serious. However, calendar reforms are now being urged, chiefly concerning the lengths of the months, in order to have the same date every year fall on the same day of the week and to have every month, or every quarter, the same.

In The World Calendar, the months differ in length, but not as much as in the Gregorian calendar, and the quarters are the same. Each quarter starts on Sunday and ends on Saturday. The first month of each quarter (January, April, July and October) has 31 days; the others 30. The World Calendar uses also a "Year-End Day" every year at the end of December, and a "Leap-Year Day," when required, at the end of June. It could be adopted with little disturbance in a year that would otherwise start on Sunday, such as 1950. Almost as convenient would be a year such as 1945, when July will begin on a Sunday, and then The World Calendar could be adopted beginning the second half of the year.*

Possibly the simplest form of calendar, however, is the one used by astronomers in counting the "Julian Day." It has nothing to do with Julius Caesar, but was introduced in 1582 by Joseph Scaliger and named in honor of his father, whose first name was also Julius. This is simply the total number of days that have elapsed since January 1, 4713 B.C. The reason for choosing that date was that then three different cycles used in time measurement all began together. By this count January 1, 1940, is referred to as J.D. 2,429,630.

*EDITOR'S NOTE: The World Calendar can be placed in operation on the last day of 1944. December 30 in that year falls on a Saturday as it does in The World Calendar. The next day, December 31, would be considered as Year-End Day, an extra Saturday World Holiday. The following day, Sunday, January 1, 1945, would then be the first day of The World Calendar.

UNIFORM GOVERNMENT RECORDS

An Interview with Walter R. Sharp, Professor of Political Science at the University of Wisconsin

By James L. C. Ford

"GOVERNMENT in the modern world is big business in every sense of the term. It is faced by the same problems as private business, problems often made more complex by complicated organization. As a result, the keeping of complete and uniform records has become a vital factor in every field of public administration. Calendar reform can aid in standardizing and simplifying these records."

Walter Rice Sharp, professor of political science at the University of Wisconsin, author of several books on the subject, and recognized authority on civil service and government administration, reached into his files and pulled out some statistics to emphasize the growing importance of government in the world's democracies today.

"In the United States one person out of every nine, excluding those on work relief, is in government service," Professor Sharp said. "That totals up to 3,800,000 individuals in this country alone. In France the number of public employees, including those engaged in local civil government but excluding the army and navy, reaches at least a million. England also has approximately a million people working for the national and local administrations. This great army of public servants is engaged in a multitude of tasks and innumerable records must be furnished the public on the work accomplished.

"That is why I have followed the intelligent efforts of The World Calendar Association to advance the movement for calendar reform with increasing interest. For calendar reform offers greater efficiency and practical advantages in standardized public reports."

The volume of paper work, commonly known as red tape, in governmental administration is proverbial. Professor Sharp pointed out that it directly affects not only financial and budget affairs for each individual bureau and department but that its importance is especially felt in other definite fields such as personnel records of every kind, yearly and monthly reports, bulletins for public information, and government research.

"To get an intelligent picture of the extent of administrative problems of this nature," Professor Sharp commented, "just consider present activities of government in the United States. Exclusive of work relief, payrolls, federal, state, and local governmental units handled a salary and wage budget of $5,400,000,000 (B) in 1937. That's equivalent to one-eighth of the amount of salaries and wages paid in the United States for that year.

"Or to look at it from another light. In New York City alone there are

nearly 140,000 full-time municipal employees. When the Federal Government is examined, amazing ramifications in the field of public business are revealed. There is the Post Office Department, the Tennessee Valley Authority, the Panama Canal, the Federal Home Loan Board, the Farm Credit Administration, the United States Shipping Board, the Government Printing Office, the Federal Deposit Insurance Corporation—to name only a few. In state government there are the state universities, teachers' retirement funds, state liquor monopolies. Municipalities operate schools, heating plants, gas, light and power plants, transportation systems, and water works.

"The value of calendar reform in private business of almost every nature has been recognized. When the extent of public activities conducted by local, state, and national governments is realized, it must also be conceded that here is a vast field in which calendar reform could be of benefit."

The World Calendar's perpetual and balanced form, equal quarters with monthly dates falling on the same weekdays, division of each month into 26 weekdays—these are practical advantages in any form of statistical work and Professor Sharp enumerated these features as helpful devices for the record-keeping inherent in public administration. He was quick to emphasize their value not only so far as the government departments are concerned but also to the public at large.

"The average citizen and voter," he said, "needs information about his government and its activities. No person can participate intelligently in a democratic country without some knowledge of its fundamental operations. The only way he can get this data is through bulletins and reports issued by governmental agencies or through statements and speeches by government officials. This information will be incomprehensible to Mr. and Mrs. John Q. Public unless it is presented in simple and interesting form. Simple records, easily compared from year to year or from month to month or week to week, are necessary. The farmer concerned with crop reports, the broker dependent upon treasury figures, the grocer wondering about his sales tax—all these citizens and their livelihood are inseparably related to these records which calendar reform can simplify and standardize."

As for the government administrator, Professor Sharp emphasized the variety of questions which necessitate uniform and trustworthy records in the field of civil service alone and personnel management.

"Records have to be kept from the time a man is employed until he leaves," Professor Sharp said. "Promotion often is by seniority—this is particularly true of the French civil service where each man has to work his way up through each grade. Records have to be kept for pension systems, days off, and sickness. Holidays and vacations mean more figuring for the administrator who has to know from month to month what his man-power is going to be and what seasonal variations may demand.

"In planning in advance, in checking against past years, what could be more helpful than a calendar by which you could check instantly and accurately from past experience. To take an example, if the official is with the Treasury Department, he can look at his figures for last year and see that on Friday, March 15, he needed 400 field workers to figure income tax returns. To carry the example further, he will realize that on the following week he will have to have 50 extra clerks to tabulate returns. Then, finally, he can take his records for each week in the spring of 1939 and check them against *exactly* comparable weeks in the spring of 1938. You can see now how helpful uniform records, based on a perpetual and balanced calendar would be."

Holidays and vacations, standardized on the same date, also would aid the government administrator, the political science expert declared. In the past, with Christmas holiday seasons varying, with the Fourth of July sometimes on a Monday and sometimes on a Friday, the bureau head was confronted with new policy decisions for each succeeding holiday.

"Under the old accidental calendar, Thanksgiving Day, which always comes on the last Thursday of November, might be November 26 or November 27 or November 30 or some other date. Under The World Calendar plan the last Thursday will always fall on November 30. The bureau head can plan accordingly and grant time off on a definite schedule."

It has recently been suggested that the President in his annual Thanksgiving Day Proclamation this year might well designate the last Monday, November 25. Its observance on this day will afford the opportunity for all to enjoy a 3-day week-end. Thanksgiving would become a blessing to both employee and employer in that it would give the former a desired long holiday and the latter would avoid an awkward break in the week.

Professor Sharp reached up and took down a book from the tall cases which line his office up to the ceiling. He thumbed through it until he found the page he wanted and then thrust it at me.

"Every political scientist appreciates the existing difficulties in handling of public records and the value of such records," Professor Sharp declared emphatically. "I've told you why I think efficiency is necessary and how calendar reform might help. Here's what Austin MacDonald, professor of political science at the University of California, says in his *American City Government and Administration*: 'There are, in fact, many reasons why careful records should be kept, showing the quantity and quality of work done by every employee in the municipal service, the number of unexcused cases of lateness and absence, and other important aspects of his service. Even in their present crude form these records serve as the basis not only for promotions, but also for increases in pay, dismissals, transfers, requests by employees for vacations or leaves of absence. They enable every department head to obtain some knowledge of the weak

spots in his organization, and to set about the task of improving its efficiency in an intelligent manner.' The uniformity which calendar reform makes possible certainly would be an assistance in improving efficiency."

Drawing upon his past experience in France in research work for the Social Science Research Council of New York, Professor Sharp mentioned the troubles arising from slipshod records.

"Working in France, the social investigator soon discovers that officialdom has not as yet been greatly impressed by the value of keeping accurate, comparable statistics on personnel practices. The reform made possible by The World Calendar not only can improve present practices in France and other countries but it can stimulate keeping of better records because with increased simplicity and comparability will come greater demand from the public and administrators alike."

Regularity, stability, efficiency—these characteristics of The World Calendar which have led to its support by leaders in every field are the features which recommend it to the political scientist. He added that there is an advantage in The World Calendar, not possible in any 13-month or other plan, in that the familiar 12 months will be retained, and the change will be so slight as to make comparisons of vital statistics between the old Gregorian and the proposed new World Calendar easy.

Professor Sharp expressed his belief in the usefulness of The World Calendar as our interview closed. "Uniformity and efficiency—that's what public records need. You know, Sir William Beveridge said once that 'Democracy, if it knows its business, has no reason to fear bureaucracy.' If democracy is going to make bureaucracy its servant instead of its master, it is faced with a most complicated task. Criticism is indispensable, if the administration of the modern state is to function as a genuine democracy. This criticism must be grounded upon a full knowledge of the facts involved; hence the importance of clear and accurate records. And that's where calendar reform comes in!"

ADVISORY COMMITTEE

SEVERAL changes have occurred in the American Advisory Committee of The World Calendar Association during the past year and are printed on page 47 of this issue. The Committee now numbers 19 individuals.

Included are representatives of major committees of the General Federation of Women's Clubs. Mrs. Gustav Ketterer, Chairman of the Department of Legislation of the Federation, takes a place on the board, which is already notably represented by other women of that organization. Mrs. Frederic Beggs heads the Department of International Relations. The leader of the Department of American Citizenship, Mrs. Frederick H. Clausen, is on the Committee. Mrs. Rowland H. Latham, Chairman of the Federation's Committee on Calendar Reform, and the veteran women's leader, Dr. Clara B. Burdette, are members.

Big business is represented in the person of Julius F. Stone, well-known midwest industrialist and banker.

It is exceedingly regrettable that ill health forces the retirement from the Committee of the distinguished American attorney, George Gordon Battle. His services to the cause of calendar reform are well known, and although he is forced to relinquish his active support his interest will not be diminished.

A recent law passed in Turkey obligating all citizens to adopt a family name accounts for the change in name of our distinguished Turkish colleague, Dr. Ihsan Ali. He will continue to head the Turkish Committee on Calendar Reform under the name of Dr. M. I. Dereoglu.

WORLD CONFERENCE

By Abbé Chauve-Bertrand

Eminent Roman Catholic Authority on the Calendar

(Translated by the Reverend Edward S. Schwegler, D.D.)

THE idea of some sort of extraordinary, universal conference is in the air. All over the globe the spirits of good-will are waiting for a sign. Such an assembly, called together on the basis of a common understanding by Pope Pius XII and the King of Italy, or, for example, by President Roosevelt or the League of Nations, could be immensely useful. It could examine many grave and urgent questions, and also many minor ones of secondary importance.

Once such a conference were convened, nothing could be better, as a change from possibly heated debates on other subjects, to transfer the discussion at certain intervals to some question that could retain everyone's attention without clashing against anyone's interests. And what question could fill such a role more easily than that of calendar reform?

The discussion of the problem would bring together the heads or delegates of the different states, no matter what their political organization might be: kingdoms, republics, empires, democracies, dictatorships, etc.; and those of the principal churches or religions, no matter what their theology: Catholic, Protestant, Orthodox, Mohammedan, Buddhist, etc. Would this not result in a very impressive "ecumenical council" of modern times, indicating that humanity wanted to examine its conscience?

When the states and the churches saw that they would be able to understand each other regarding a universal calendar, another step would be suggested: the adoption of what is known as the "international Sunday." Why could not all the churches hold their religious services on the same day? Some laudable beginnings towards this end can already be mentioned. In Turkey and India, and perhaps also elsewhere, the Mohammedans, although continuing their devotions on Friday, also observe Sunday; and among the Jews, the Israelite Liberal Union founded by Rabbi Louis-Germain Levy has inaugurated Sunday services.

As far as holidays are concerned, each church and each nation would only have to transcribe its religious and civil holidays to the reformed calendar, together with its various anniversaries. An example of how this might be done is to be found in *The World Calendar Almanac* by P. W. Wilson. With such a synthesis on hand, we could study the origin and meaning of the different holidays and possibly make some of them coincide. For example, a world-wide agreement might be reached for celebrating the beginning of the year on the same day. That day could very well correspond to the Christian Christmas, which comes at the same time as

the old winter solstice, formerly celebrated by the ancient pagan cults.*

Such a study would make us see the significance of many rites and symbolical facts and rediscover their social and psychological value. As things are, we perish from routine and lack of interest. Is it too much to hope that Catholics, the Orthodox and Protestants, by proclaiming what they have in common rather than what divides them, might accelerate a rapprochment already begun? Would the monotheistic religions—Judaism, Christianity, Islamism—have any difficulty in realizing that at least the first article of their *Credo* is the same? Could not these great religions, whilst conserving their secondary, though important, divergences, concert their efforts, and, with the aid of secular governments, develop or restore in all disaffected consciences the fundamental beliefs and the indispensable concepts of morality? Agreement in calendrical matters could be a first step towards united action along these further lines.

The need for such action is only too evident. The fundamental concepts of morality are especially indispensable. As a result of their breakdown, the basic ideas of a social order and of society itself are being called into question. To counteract this debacle, some heads of states are recommending a return to force, whilst others, standing terrified at the brink of the abyss—where, if these things continue, everything threatens to collapse—others are making continued and increasing appeals to those spiritual realities without which civilization would be impossible. Have we not heard it said many times that the social question is a religious one—or a moral one—and that peace between nations can be established only through justice and good-will? *Opus Justitiæ Pax* is the motto of our new Pope, Pius XII. "To peace through justice." Let us incidentally render homage to Mr. Roosevelt, the eminent President of the United States, for having proclaimed that faith and churches are essential to democracy. "Faith," wrote Fustel de Cosanges, "was the basis of the ancient city, and faith alone can be the basis of the modern city."

If we wish to establish this city of the future, this improved and better world—this "new order," as Cardinal Verdier says—we must begin on a foundation of faith. We are confronted with a gigantic task. "We are approaching the greatest of religious epochs," to quote J. de Maistre.

Every man of sufficient courage must be ready to overcome grievous difficulties and contribute his stone towards building this august edifice of the future, on which for the time being work has evidently ceased.

We will bring our stone, in the form of a revised calendar. Calendar reform must be a part of any great program for the improvement of the world we live in. Inaugurated now, and inaugurated in the right spirit, it could become the humble beginning of many great and useful developments.

*EDITOR'S NOTE: Desirable as a change in the beginning of the year may be, calendar reform authorities generally agree that its introduction at the same time as a perpetual civil calendar would cause too great a disturbance, and would therefore fail to achieve popular acceptance.

WEEKDAYS IN THE WORLD CALENDAR

By Elisabeth Achelis

President of The World Calendar Association

ONE of the important features of The World Calendar, frequently overlooked and even misunderstood, is the allotment to each month of 26 weekdays plus Sundays. In ordinary usage, the greater number of these 26 *weekdays* are work-days, but it is not accurate to say that *all* of them are *work-days*. Funk and Wagnalls' dictionary defines the weekday as "any day of the week except Sunday." It is obvious, then, that weekdays may be either holidays or work-days.

The number of work-days in any given week is influenced by business practices and occupational differences, by national customs or local usages, by civil holidays or religious feast-days. Although in certain industries, the 5-day work-week is recognized, yet the majority of people still work five and one-half days in the week—the second half of Saturday being in most instances a recreational period. Many occupations, however, require attention on all of the weekdays and include the performance of duties on holidays as well as on Sundays. In such cases, adjustment is made among the various employees, who enjoy another day of rest within the week.

With each month containing exactly 26 *weekdays plus Sundays* and each quarter being allotted exactly 91 days or 13 weeks or three months, the eminently mathematical structure of The World Calendar is established. What has been carefully insisted upon in The World Calendar is the simplicity, orderliness and exactness of the essential form of the plan itself.

National holidays cut into the industrial working-week and together with local observances of special days make each working-week different in each country and throughout the calendar year. Religious holidays, whether observed nationally or locally, change still further the character of the working-week. Yet all these differences do not alter the 26 weekdays in any given month of The World Calendar.

It may be safely said that there is hardly a weekday in the year which is not a holiday in some country or locality. The regulation and stabilization of national and local holidays is left to each nation. The importance, therefore, of the terminology of *weekday* instead of *work-day* cannot be overemphasized.

A booklet, *Bank and Public Holidays Throughout the World*, issued in

1940 by the Guaranty Trust Company of New York, lists the different holidays in the various countries. Students of the calendar will be interested to note the way in which a few of these nationally observed holidays, listed below, fall on different dates and months, thereby changing the character of the working-week in each country; yet they do not alter the number of 26 *weekdays* of the month.

Argentina	Independence	May 25
Belgium	National Independence	July 21 (observed on Monday)
Brazil	Independence	September 7
Bulgaria	Birthday King Boris III	January 30
Canada	Victoria Day	May 24
Chile	Independence	September 18, 19, 20
China	Dragon Boat Festival	June 10
Denmark	Constitution	June 5
Finland	Independence	December 6
France	National Holiday	July 14 (observed on Monday)
Germany	National Independence	January 30
Great Britain	Bank Holiday	August 5 (first Monday in August)
Greece	St. George	April 23
Hungary	National Holiday	March 15
Iran	Birthday of the Prophet	May 7
Iraq	Birthday, King Faisal II	May 2
Italy	National Holiday	October 28
Japan	Festival Vernal Equinox	March 21
	Festival Autumnal Equinox	September 23
Mexico	Our Lady of Guadalupe	December 12
Netherlands	Queen's Birthday	August 31
Norway	Independence Day	May 17
Paraguay	Constitution Day	November 25
Peru	National Independence	July 29, 30
Portugal	Republic established	October 5
Roumania	National Holiday	May 10
Sweden	Midsummer Day	June 24
Switzerland	Independence Day	August 1
Turkey	National Holidays	August 30 October 28, noon, 29, 30
U.S.S.R.	Constitution Day	December 5
United States	Washington's Birthday	February 22
	Independence Day	July 4
Uruguay	Constitution	July 18
Venezuela	National Holidays	April 19; July 5, 24
Yugoslavia	King's Birthday	September 6

The mathematical World Calendar of 12 months, equal-quarters (the terminology equal-quarters distinguishes it from the 12-month Gregorian calendar now in general use), is notable in other particulars. The seven-day-week sections of the year are firmly established. By beginning each quarter in the year with the first day of the week, Sunday, and by closing

each quarter with the seventh day, Saturday, the week—after many centuries of annual peregrinations—has finally secured a steady and permanent place in the calendar. No longer does it wander. The number seven fits perfectly into this mathematical pattern of Time.

The World Calendar also recognizes 13 complete weeks in each of the four quarter-year divisions of the calendar. For the first time the seemingly irreconcilable number 13 is harmoniously applicable and workable with all the other calendar units. Thirteen is no longer an outcast and taboo in this calendar-plan of Time.

And the stabilization of the new calendar is made possible through the use of one or two "gift" days. These days keep the calendar true to the accurate length of the solar year and with the regular cycle of the seasons. The Year-End Day, placed at the end of every year, is an extra Saturday, a world-holiday; and the quadrennial Leap-Year Day in midsummer, on another extra Saturday, is also a world-holiday. These one or two "gift" holidays complete the mathematical and orderly World Calendar of 12 months and equal-quarters. *These days should never be considered as work-days.* They do not interfere with nor intrude upon the regular 26 weekdays plus Sundays in the 12 months of The World Calendar. These world-holidays may well be used by mankind in his ever increasing desire toward world unity.

HISTORICAL CALENDAR MISCONCEPTIONS

By Charles C. Sutter

FREQUENTLY learned publications, including the *Journal of Calendar Reform,* include articles in which authors perpetuate the popular myth, which has no historical basis, asserting that Augustus borrowed a day from February to increase his birth-month, August. While interesting as a classical illustration of imperial vanity, this legend has no basis in fact.

There also exists a misconception as to just what constituted the Julian reform. We are indebted to Roscoe Lamont (see article, "Augustan Myths," *Journal of Calendar Reform,* Vol. IX, p. 10) for bringing to light the work of Censorinus and Macrobius upon whose, shall we say, eye-witness accounts rests much of our present-day knowledge of the Julian and Augustan changes.

Julius Caesar made a frank and final abandonment of the lunar year. Ten days were added to the pre-Julian year of 355 days to make the civil year 365 days long, and the pontiffs were directed to intercalate one day every four years at the end of February. This was the famous Leap-Year Rule. The additional days were distributed in the calendar as we know them today. The Julian calendar thus in its length of months was the same irregular system we have now.

Caesar's leap-year rule began to be misinterpreted after his death, and it had to be adjusted by his successor, Augustus. He omitted three intercalations between 8 B.C. and 8 A.D., with 8 A.D. the first of modern leap years, so that all leap years are always of a number divisible by four.

The Roman Senate, which had already honored Julius Caesar's memory by calling Quintilis, Julius (July), and not wishing to slight Augustus, named Sextilis, Augustus (August), a month which had the same number of days as July. No day was borrowed from February, for in the old Roman calendar, February already had 28 days.

MAYAN TIME MEASURES

By CLIFFORD N. ANDERSON

Bell Telephone Laboratories

(From *Sky*, June, 1939)

IN the Yucatan peninsula, Guatemala and adjacent territory, there live today several hundred thousand Mayas, descendants of a race which developed the highest civilization in the New World before the coming of the Europeans. Ruins of their long-deserted cities attest to their skill in architecture, sculpture, painting, weaving, ceramics and jewelry. But in one field they even excelled their contemporaries in the Old World—TIME.

They had worked out simple symbols for numbers and gave a position value to the numerals; discovered the concept of zero at least 1000 years before its use in Europe and 500 years before its use by the Hindus; developed a calendar for recording time and derived a value for the tropical year equal in accuracy to our Gregorian calendar but did it 1000 years earlier than the latter's introduction; and devised Venus and moon tables which were at least as accurate as any at the time and eclipses could be predicted with remarkable accuracy.

Information about the Mayas has been gained from the ruins of their cities, Mayan "books" called codices; the writings of the Spanish Con-

Beginning at the left, are Mayan Face Numerals 1, 3, 4, 5, 6, 9, 10. Next in order are the normal forms of the Period Glyphs: baktun, katun, tun, uinal and kin. The last five are the Face Forms of the same Period Glyphs with an introductory glyph preceding. Diagram from Spinden.

quistadores and the Books of Chilam Balam. These last were written by the Mayan Indians during the Spanish colonial period in the Mayan language but with European script. They relate Mayan chronicles and myths.

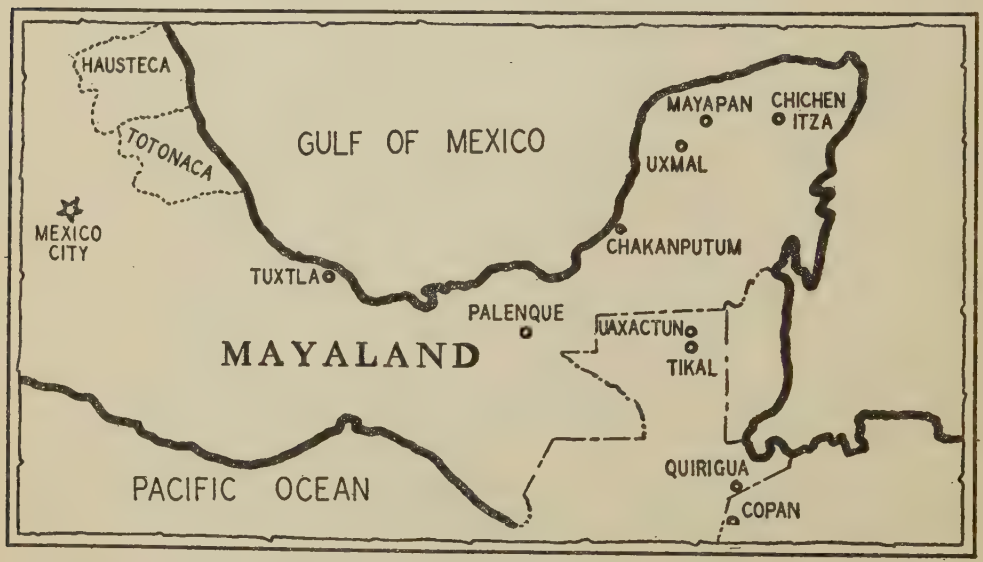
In the Mayan written language, as in Chinese, each character represented a word or idea. About 400 different basic characters with their numerous variants have been found. Most of these deal with astronomy, possibly because most of the remains of their writings are those carved on stone stelae which were principally astronomical records. The present-day knowledge of these hieroglyphics is limited principally to the 20 day-signs, the 19 month-signs, the numerals including the face-signs, signs for the sun, moon, Venus and possibly Mars and Jupiter, possibly the eclipse sign,

several gods and some other pictographic forms. This isn't very encouraging for the historian but exceedingly fortunate for the astronomer.

The earliest recorded Mayan date, 8.6.2.4.17, on a small statuette from San Andres Tuxtla, corresponds to either 98 B.C. or 161 A.D.* Certainly it is true that by the time of Christ, the Mayas had developed a calendar and hieroglyphic writing. It is impossible to say how long before this they rose above a mere existence. The zero of their calendar is before 3000 B.C. but this is probably a mythical date rather than a historical one.

The next known date, 8.14.3.1.12, or 320 A.D., is on the Leyden Plate now in Holland. The next is on stela 9 at Uaxactun (8.14.10.13.15 or about 327 A.D.). Then dates are numerous at such Mayan cities as Tikal, Copan, and Palenque, until they cease altogether about 889 A.D. (10.3.0.0.0).

With the dying out of the culture in these southern cities, the scene shifts to northern Yucatan. Just what caused the exodus from the south



is not known—possibly soil exhaustion—but by 879 A.D. (10.2.9.1.9), Chichen Itza was well along in its development and destined to become the largest city and the religious center of the Mayas.

Fifty years later, Chichen Itza too was abandoned, the population moved westward to Chakanputum where they lived for two centuries. Then the Mayas moved back to Chichen Itza and reoccupied it about 1100 A.D.

Other cities sprang up, among them Uxmal and Mayapan, which, to-

*In January, 1939, a stela with the date 193 years earlier than the Tuxtla statuette was unearthed about 15 miles west of San Andres Tuxtla. See "Discovering the New World's Oldest Dated Work of Man," by Matthew W. Stirling, *The National Geographic Magazine*, August, 1939.

gether with Chichen Itza, formed the League of Mayapan. Peace and general prosperity brought about by the League resulted in a scientific and artistic renaissance. Civil war broke up the League and the ruler of Mayapan with the aid of Toltec-Aztec allies from Mexico conquered the Itzas. The foreign conquerors brought with them the worship of their fair-haired god Quetzalcoatl—the feathered serpent—renamed him Kulkulkan and built new temples and rebuilt the old, all dedicated to the new god.

But the Mayan civilization was nearing its end: October 12, 1492, Columbus discovered a new world. It was 1511 before the Spanish first reached Yucatan. Mexico was conquered by Cortes in 1524 and as late as 1535 there wasn't a Spaniard in Yucatan. Bows and arrows can't compete with bullets, however, and finally in 1542 the city of Merida fell. In a large bonfire in the city of Mani in 1562, de Landa destroyed 5000 idols, 13 large stone altars, 22 small stones, 27 rolls of signs and hieroglyphics on deerskin and 197 vases. "We found among them a great number of books in their letters and because they had nothing but superstitions and lies of the devil, we burned them all, which they felt deeply and gave them pain." Thus were destroyed records of Mayan arithmetic and astronomy.

The Mayas had a vigesimal system with 20 digits for counting as contrasted with our decimal system with 10 digits and whereas we read our numerals from left to right, the Mayas read theirs from top to bottom. To the unaccustomed, it may be a little more cumbersome to think in "twenties" than in "tens" but the difference is small. Their method of representing digits was somewhat simpler than ours as they had but four symbols: an eyelike symbol for zero, dots to represent units, bars to denote fives and a moon symbol for 20. The number 13, for example, would be represented by a row of three dots over two horizontal bars. In addition, the artistic

THE TZOLKIN

Day Names	*Associated Day Number for the 260 Combinations*												
IMIX	1	8	2	9	3	10	4	11	5	12	6	13	7
IK	2	9	3	10	4	11	5	12	6	13	7	1	8
AKBAL	3	10	4	11	5	12	6	13	7	1	8	2	9
KAN	4	11	5	12	6	13	7	1	8	2	9	3	10
CHICCHAN	5	12	6	13	7	1	8	2	9	3	10	4	11
CIMI	6	13	7	1	8	2	9	3	10	4	11	5	12
MANIK	7	1	8	2	9	3	10	4	11	5	12	6	13
LAMAT	8	2	9	3	10	4	11	5	12	6	13	7	1
MULUC	9	3	10	4	11	5	12	6	13	7	1	8	2
OC	10	4	11	5	12	6	13	7	1	8	2	9	3
CHUEN	11	5	12	6	13	7	1	8	2	9	3	10	4
EB	12	6	13	7	1	8	2	9	3	10	4	11	5
BEN	13	7	1	8	2	9	3	10	4	11	5	12	6
IX	1	8	2	9	3	10	4	11	5	12	6	13	7
MEN	2	9	3	10	4	11	5	12	6	13	7	1	8
CIB	3	10	4	11	5	12	6	13	7	1	8	2	9
CABAN	4	11	5	12	6	13	7	1	8	2	9	3	10
EZNAB	5	12	6	13	7	1	8	2	9	3	10	4	11
CAUAC	6	13	7	1	8	2	9	3	10	4	11	5	12
AHAU	7	1	8	2	9	3	10	4	11	5	12	6	13

nature of the Mayas led them to devise a system of 13 types of human heads and then by applying the characteristic jaw of the head for 10 to the heads for 4, 5, 6, 7, 8 and 9 they formed a series of 14, 15, 16, 17, 18 and 19.

In writing numerals, a position value was given to the symbols. For example, when we write 32 we really mean $(3 \times 10) + 2$. Similarly when the Mayas wrote a "three" above a "two" they meant $(3 \times 20) + 2$ or 62.

The Mayas did not have fractions as such. They did, however, delight in combinations in which an integral number of units of one kind would equal an integral number of units of another. For example: *81 moons = 2392 days* gave a value of 29.53086 days for the lunar month compared with the now accepted value of 29.53059 days.

The Mayan calendar was simply a machine in which a wheel moved a cog each day. No attempt was made to gear it to the sun as in the Gregorian, nor to the moon as in the Chinese, Mohammedan and Jewish. It was simply an arbitrary orderly succession of days going on and on. Its accuracy was that of the priest in charge. That they did make mistakes is attested to by the occasional conferences between the priest-astronomers to determine what day it was.

The Mayas had two ways of indicating any particular day. One was a number which indicated how many years, months and days had passed since some arbitrary starting point. This has been called the "Long Count" and is illustrated by the historical dates given earlier in this article. The other method involved a combination of day and month names and two sets of numbers which gave the position of the day in a period of 52 years. This has been called the "Calendar Round." "Monday the third" means to us a specific day in a 7- or 8-month period; "Monday, January third" means a specific date in a 6- or 7-year period. The Mayan system was similar except that their period was 52 years. A complete date record would be the Long Count date with the supplementary identification of the day in the Calendar Round such as 10.2.0.0.0. 3 Ahau 3 Chen. This has been called an Initial Series date as the series was introduced by a special glyph called the Initial Series Glyph.

The Long Count consisted of a series of numbers, one above the other with the longest period on top. The five units usually used in a Long Count series and their equivalents are:

Baktun (approx. 400 years) = 20 Katuns
Katun (approx. 20 years) = 20 Tuns
Tun (approx. 1 year) = 18 Uinals
Uinal = 20 Kins (day)

This was sufficient for about 8000 years. For longer periods they used:

Pictun (approx. 8,000 years) = 20 Baktuns
Cabaltun (approx. 160,000 years) = 20 Pictuns

which sufficed for over 3,000,000 years. In Tikal there is a record of an

8-period figure and eight periods extend the system to 65,000,000 years. No people had before thought in terms of such periods of time. But for the Long Count, five periods sufficed: Baktun, Katun, Tun, Uinal and Kin.

The 52-year Calendar Round was the combination of a 260-day period called a *Tzolkin* and a 365-day period for which we do not know the Mayan name, but which has been called either the "haab" or the "vague year." The pseudo-year was comprised of 18 months of 20 days and one 5-day month—the unlucky one. Each month had a name* and the days of the month were numbered starting with 0 and ending with 19 as the Mayas counted in elapsed time. The 20 day names repeated themselves continuously in the same way that our days do and were combined with a repeating series of the numbers 1 to 13 so that at the end of 260 days (the *Tzolkin*) the combination name and numbers repeated themselves. The net result is that a day name and a day number identify a particular day in a 260-day period and by also giving the day a position number in the month, a particular day in a 52-year period is indicated.

Several modifications of the Initial Series dates developed. The method requires eight glyphs to express a date, which is costly of space and effort, particularly with several dates on one monument. So after about 900 A.D., the dates were no longer written in the entire series. The length of the lunar month was known; the tropical year was known; the Venus cycle had been determined; everything was settled; they knew all the answers; there was no more need for recording a lot of data to be correlated with the past. So the Period-Ending system was resorted to, which gave merely the ending dates of the Katuns. This, after all, wasn't so bad; such a period-ending would not recur for 18,980 Katuns or 374,153 years. Still later, only Tun endings appear, which are accurate to 18,707 years, but when the month parts are omitted, as was usually the case, the results are accurate only within a 260-year period. The analogy to our present calendar would be to write January 1, '39. A thousand years hence, who would know what century was meant?

If the Mayas had only retained the Long-Count system until the arrival of the Spaniards, there would have been no question as to the correlation of the Mayan and the Gregorian calendars. All authorities agree that Merida was founded in Katun 11 Ahau, but since such a date recurs every 260 years there is no way of knowing which Katun is meant without the month part. The choice of correlations seems to have narrowed down to two: one originally proposed by Goodman and revived by Martinez and Thompson gives the zero year of the calendar as 3,113** B.C., whereas Spinden and Morley favor 3,373 B.C.

In a tropical region such as that inhabited by the Mayas, with a generally uniform climate throughout the year, the two most obvious divisions of time are the day and the lunar month. Naturally lunar observations were an important item in the life of the Mayan astronomer and most of the known complete dates refer to the moon. A supplementary series of glyphs indicate the significance of the information. "Glyphs A and B" indicate whether the current moon is a 30-day or a 29-day moon; "Glyph C" indicates the number of moons after an ecliptic conjunction; "Glyphs D and E" give the age of the moon in days from the last new moon, "D" for days up to 19 and "E" for 20 days and over.

The Mayas did not deal in fractions so the problem was to find an integral number

*Pop, Uo, Zip, Zota, Tzec, Xul, Yaxkin, Mol, Chen, Yax, Zac, Ceh, Mac, Kankin, Muan, Pax, Kayab, Cumhu, and Uayeb (5 days).

**According to Teeple, "The only correlation for which there is no contrary astronomical data." All dates in this article are therefore based upon this.

of moons which correspond exactly to an integral number of days. At Palenque 81 moons were taken equal to 2,392 days, which gave a value for the lunar month of 29.53086 days. The corresponding figures at Copan were 149 moons equal to 4,400 days, giving a lunar month equal to 29.53020 days. Compared with our accepted value of 29.53059 days, the error amounts to only about a day in 300 years.

There was little need to correct the Mayan calendar in order that a given date, such as 4 Ahau 8 Cumhu (the first day of their Long Count series), would always occupy the same position in the solar year. Consequently, a given date would gradually retrogress through the solar year until after 1,507 years it would be back at the starting point. The Mayan priest-astronomer was, however, interested in determining on what day in his calendar certain historical dates should be celebrated and so, although he didn't correct the calendar, he wanted to know what that correction was.

The relation of 19 years (approximately) being equivalent to 235 synodic months (known to us as the Metonic Cycle) was known to the Mayas. With this relation and assuming 149 synodic months equal to 4,400 days, the Copan astronomers arrived at a figure of 365.2420 days for the tropical year which compares as favorably with the now accepted value of 365.2422 days as the Gregorian value of 365.2425 days. However, the Mayan figure was arrived at nearly 1,000 years earlier. The extreme accuracy was partly due to the balancing out of two errors in the equations as the values for both the 19-year period and the lunar month were slightly low. At Palenque the method was apparently different, possibly adding 35 days to 144 vague years, giving a value of 365.2430 days.

Our information concerning the Mayan knowledge of eclipses is obtained almost wholly from the Dresden Codex. Here is shown an arrangement of 405 consecutive moons covering nearly 33 years arranged in 69 groups of five or six moons each. Every one of the 69 groups ends on a day when an eclipse could occur somewhere on the earth and it is assumed that the table is one of eclipse syzygies. Very little has been identified in the inscriptions but it is believed that the Mayas were probably familiar with the general method of eclipse occurrence.

The Dresden Codex gives Venus tables describing the Venus synodic cycle as 236 days as a morning star, 90 days in disappearance (superior conjunction), 250 days as an evening star and eight days in disappearance (inferior conjunction), giving a total of 584 days. Actually the synodic periods run in a series of five: 580, 587, 583, 583 and 587, averaging 583.92 days.

The Mayas were well aware of the approximate relation of five Venus years equaling eight solar years (2,720 days) but further than that they used 65 synodic Venus revolutions to equal two Calendar Rounds (each 52 years), or, 37,960 days, with occasional corrections. A 4-day correction was made after each of four groups of 57 Venus revolutions and then an 8-day correction was made after a 67-revolution period, making a 24-day correction in about 301 years. This is equivalent to an amazingly accurate synodic period for Venus of 583.9201 days.

Although their Venus tables are very accurate and the Mayas were in general far advanced in observational astronomy, it is doubtful if they had any insight as to the mechanism or ever suspected a Copernican system.

Most astonishing, though, is the accuracy of their observations, the interrelation of their various calendar elements, the level of their mathematical achievement and the extent of their astronomical knowledge.

THE WORLD CALENDAR SPEAKS

By Robert P. Shaw

Director, New York Museum of Science and Industry

As The World Calendar exhibit enters upon its second year in the New York Museum of Science and Industry in Rockefeller Center, it is being equipped to tell its own story. Before the end of March, this colorful and animated display, which presents the historical background of our own calendar and explains the proposed World Calendar, will in literal truth be speaking for itself and arguing its own case by means of a sound device installed in its mechanism.

It seemed only fitting that an idea as advanced and progressive as that of The World Calendar should be given the most up-to-the-minute setting modern exhibition techniques could devise. For this reason, and also because of the lively effect which the addition of sound lends to any demonstration, it was decided to give the exhibit a voice of its own.

This has been done in the following manner. At right and left sides of the large frame in which the display is built, push buttons and telephone receivers have been installed, one push button and three receivers on each side. When the Museum visitor pushes the button, he starts a concealed phonograph which, as he listens through the receiver, offers him a 5-minute running commentary on the story presented by the continuously changing pictures and transparencies of the display itself. Thus, as the visitor watches the panorama of the calendar unfold before his eyes, he hears at the same time an explanation of just how his own life is affected by the uncertainties of our present arrangement of days, weeks, months and years, and the benefits to be gained by the proposed uniform and coordinated arrangement. When the explanation has been given once, the hidden voice stops, but any visitor who wishes to hear it again has only to press the button a second time.

Following is the message which comes to the visitor's ear as intimately and informally as one person would speak to another:

"Let me give you a brief story of that little pad of monthly dates on your desk, similar to the pads now lying on millions of other desks all over the civilized world. Do you know that we could be freed forever from the tyranny of those irregular monthly groups of numbers; literally over night? Our calendar pad would remain on our desk, a constant reminder of our daily tasks, but it would be unchanged from year to year.

"It can be done! A great international organization has assembled the information of centuries of astronomical research, has taken account of the rigorous demands of great business organizations, has given kindly consideration to religious traditions and to patriotic devotion to national

holidays in formulating a scheme for a yearly calendar that will wipe out at once those numberless difficulties with days of the week and dates of the month that are one of the minor ills of human life. This alone would be more than enough to recommend it to our attention; but it has far weightier reasons in its favor. Indeed, these wider implications are suggested by the name that has been adopted for this new scheme of time-measurement, frankly, avowedly intended as one step toward the millennium. That name is 'The World Calendar.'

"It would be quite impossible here to discuss in detail even *one* of the astronomical facts that have befuddled all calendar-makers since the time of the Chaldeans thousands of years ago. Central Asia, Egypt, and Europe have in turn been thrown from one confusion into another by the attempts of their astronomers to fit the day, the week, the month and the season into the cycle that we call The Year. This we now know cannot be done. But we do now know the length of the year so exactly that we can make an arrangement of days so nice in adjustment that only once in about 3,300 years will we have to drop one day from our calendar to keep our seasons and our dates in proper step.

"The one difficulty that remains before we can properly use this exact knowledge is the present irregular arrangement of the dates within our months. The World Calendar removes that difficulty by a simplifying stroke that charms all who give it a few moments' thought. This simplifying stroke lies in abandoning *The Month* as the *basic* unit in the year and in substituting *The Quarter*—four of them, of course, for the year. But—and here is the master-stroke—all quarters are of the same length, 91 days, or 13 weeks. Then, within each quarter lie the three months of 31, 30 and 30 days respectively. That perfect symmetry, however, gives us only 364 days and we must have 365! To meet that necessity, one extra day, Year-End Day, an extra Saturday, follows December 30 every year; and, every four years (except century years not divisible by 400) there comes a day following June 30, also an extra Saturday, to take the place of our misbegotten February 29 as Leap-Year Day. Both Year-End Day and Leap-Year Day are to be world holidays devoted to world peace.

"When this calendar is adopted, as it is hoped it will be by 1945, all present calendar pads, diaries and engagement books, which now change every year, will be as permanent as our clock. A single card becomes a perpetual calendar to serve us through all the days of our years. Each quarter begins on Sunday, ends on Saturday, has three months, each with 26 weekdays. Every anniversary, every holiday, falls on the same day of the week year after year. Slight shifts will give us many long week-end holidays such as the popular Labor Day now gives us.

"Time does not allow us to enumerate its other advantages. Truly, with its adoption our unbalanced, irregular calendar would be reformed

to join those other balanced quarters of the earth, with its 'four corners,' its winds from the four directions, North, East, West and South. It would join the symmetry of the hour with its four quarters. Indeed our Year would stand like that Holy City of *Revelation* four-square to the world, with its 12 gates, three in each direction. Those gates are never to be closed, the nations are to walk in honor within this four-square city, and therein stands The Tree of Life bearing 12 manner of fruits and yielding her fruit every month. Moreover, the leaves of that Tree will be 'for the healing of the nations.' This amazing similarity with The World Calendar suggests the idea that its adoption may be the fulfillment of a Biblical prophecy and that its two *world holidays* may then be said to symbolize those leaves of The Tree of Life that are 'for the healing of the nations.' "

VAGARIES OF EASTER

THE early observance of Easter this year calls attention anew to the annual wanderings of this important Christian feast-day. Easter Sunday came on March 24, within two days of the earliest possible date.

It was also interesting to observe, this year, the celebration of St. Patrick's Day on Palm Sunday, for it is a rare occurrence for the shamrock to meet the palm. Not since 1799 has Palm Sunday fallen on March 17, the day of St. Patrick, the saint who used the shamrock to illustrate the mystery of the Trinity. It may never occur again; for under the perpetual World Calendar, which can be introduced in 1945, it has been suggested that religious authorities could stabilize Easter on April 8; and Palm Sunday would then occur on April 1.

The need for the stabilization of Easter is emphasized by a glance at the dates on which it will occur in coming years. Next year Easter falls on April 13, the following year on April 5, and in 1943 it will be observed on the latest possible date, April 25. In 1944 it strikes the average between its two extreme dates, April 9. In 1945 it will be celebrated on April 1, and the following year on April 21. It is anticipated that in 1945, Easter will be stabilized on April 8.

It lies within the jurisdiction of the leaders of the great Christian Churches to make it possible for Christians throughout the world to observe Easter on one and the same Sunday which can be stabilized in the perpetual World Calendar, adopted by the nations for the benefit of mankind.

CONTENDERS FOR TIME'S HONORS

By Fred Winslow Adams

Professor in Boston University School of Theology

REPRESENTATIVES of 41 nations met at Geneva on November 15, 1920, to set up the League of Nations. This was in part made possible because these representatives, in spite of differences in racial heritage, language, forms of government, and economic conditions, could sign on the same dotted line, for they shared a common calendar.

To have given civilization such a bond of unity for marking time was an achievement that goes without celebration. In case such celebrations were to be held, there would be many contenders for honors, for many men made possible the calendar we today take for granted. And yet, in some mysterious manner, one name seems to stand out above all others. I am purposely leaving the reader to guess for himself that one outstanding name.

When Julius Caesar returned from Egypt in B. C. 46, he brought back to the Roman Empire the Egyptian calendar. The Egyptians had long studied the habits of the shadows which stole around the bases of the pyramids eluding the tropical sun. They had from such measurements determined the length of the solar year to be 365.25 days. The Babylonians had made the same discovery even earlier, but were too conservative to put their finding into practice. Egypt, however, went ahead. She divided her year into 12 months of 30 days each. This reckoning gave five extra days, six in leap year, unaccounted for. The extra days were added as holy days, each named after an Egyptian god.

Julius Caesar abolished the lunar year. With the advice of the Egyptian astronomer Sosigenes, he accepted the solar year of 365.25 days and the civil year of 365 days, as he had found them in Egypt. But he did not approve carrying over five extra holy days or holidays. Moreover there were but 355 days in the Roman year in current use. This left 10 days for him to account for. He did so by adding two days each to the months of January, Sextilis, and December, and one day each to April, June, September, and November. The other five months remained as they were. And all the months, as arranged by Julius Caesar, have remained the same down to the present day.* Julius still had one extra day which would come every four years. This was arranged for by adding a leap-year day to February, giving it 29 days every fourth year.

In honor of this reform of the calendar, the month, Quintilis, in which

*EDITOR'S NOTE: This fact is prominently mentioned in the exhibit, "The Story of the Calendar," sponsored by The World Calendar Association, on view the entire year at the New York Museum of Science and Industry in Rockefeller Center. See also *Journal of Calendar Reform*, First Quarter, 1939, page 10, and page 16 of this issue.

Caesar was born, was changed to Julius (July) on motion of the Consul, Marcus Antonius, son of Marcus. From that day to this the month of July has been the month of Julius Caesar. Of all the triumphs of this great Caesar, whom Shakespeare called "the foremost man of all the world," the greatest was that of the Julian calendar.

It was once said that all roads lead to Rome. It was eventually to be said that the civil calendars of all European countries lead to the Julian calendar, itself reckoning time from the building of the city of Rome.

Augustus Caesar, the first Roman Emperor, further reformed the calendar. There is no validation of the myth that he added a day to August, giving it 31 days. But Augustus' vanity may have been peaked in having Julius Caesar's birth immortalized in one of the months of the year. He had succeeded Julius Caesar as Pontifex Maximus, as well as ruler. His arms too had brought triumphs to Rome as had the first Caesar. He might have exclaimed for himself, somewhat as Cassius exclaimed for Brutus, "Pronounce the two names together, Augustus and Julius; why, Augustus sounds as well as Julius!" At any rate the Roman Senate passed a decree renaming the month of Sextilis, Augustus (August), and it has remained so ever since. September and not August was his real birth-month, but it was in the month of Sextilis that he was first made Consul and thrice entered Rome in triumph, so there he stands side by side with Julius, whom he succeeded in office. The contagion of naming months for emperors which followed threatened to exhaust the available months. Nero, Claudius, Germanicus, and others had their "honorific months." But these were mere spasms. Only July and August survived the ravages of time. Augustus, however, did make a notable reform in the calendar. The College of Pontiffs failed to carry out Julius Caesar's directions for leaping every fourth year. They authorized the practice of leaping every third year. Augustus discovered in the year B. C. 8 that, because of this mistake, the year actually began three days late. To rectify the miscalculation he suspended the next three intercalations. Then he restored the Julian directions and ordered that a leap year should fall every fourth year. That made A. D. 8 the first of our modern leap years, and shows why all leap years are divisible by four. For this achievement the calendar has sometimes been called Augustan.

Constantine the Great, the first Christian Emperor, also interested himself in calendar reform. He is said to have Christianized the calendar. His contributions centered in "the week." The Egyptians and Romans had no weeks. The Greeks had divided the lunar month into a 10-day week. The Jews, widely dispersed throughout the Roman Empire, observed their Mosaic 7-day week, with the last or seventh day sacred to worship and rest. The Christians followed the Jewish 7-day week, but substituted for the Sabbath or seventh day, Sunday, the first day, on which they celebrated the

Resurrection of the Lord by a liturgical Lord's Supper. Constantine in A. D. 321 immersed the civil year in his new faith by proclaiming Sunday a day of rest and religious observance. Eventually he made Christianity a state religion. In A. D. 325 at Nicaea the 7-day week was sanctioned.

While, as already stated, the Romans had no calendar week, the interval between markets made what has been called an 8-day "market" week. In fact, to facilitate the change from this practice to the new 7-day week, Constantine had the weeks exhibited in parallel, painted in letters of gold. Hence the use of the ecclesiastical word "golden."* This change may have been further aided by the astrologer's planetary week of seven days, allotted to the sun and moon and five planets of Mercury, Venus, Mars, Jupiter, and Saturn. This was part of an international system of astrology by which all time was apportioned to the sway of the heavenly bodies. In any case, the week still carries the planetary names, beginning with Sun Day or Sunday. To Constantine is assigned the honor of establishing the 7-day week which still obtains in Western civilization, and of having put the calendar on a firmer foundation than that of the Empire.

Rome fell in the ending of the Fifth Century. The Julian-Augustan-Constantine calendar might have fallen with the Empire had it not had the Church mothering it. But it now faced extinction from another source. Mohammed arose as a new religious leader in the Sixth Century. He eventually sallied forth on a world conquest no less real than that of Alexander or Julius Caesar. He gave his followers a Moslem calendar built on the lunar month, instead of the solar year which had been the basis of the Egyptian calendar, as it had of the Julian. The Moslem year had 12 months, renamed, and of alternating 30 and 29 days each. This calendar was accepted in a rapidly increasing Islamic world, which challenged Christianity. The discrepancy of the Moslem year with the solar year was about 11½ days. That meant that the months eventually failed to synchronize with the spring and autumn equinoxes, the summer and winter solstices, and with time as reckoned in other lands. "What of it? Can science stand in the face of Allah? It is of Allah, and so unchangeable and eternal!" And thus the Moslem calendar continued reckoning time from the Hegira, or flight of Mohammed from Mecca to Medina in A. D. 622, with its loss of about 11½ days each year. In A. D. 1927, Turkey abandoned the sacred calendar of Mohammed for solar time measurement.

Pope Gregory XIII is another distinctive contender for calendar honors. It was he who called for a calendar reform to cover a discrepancy, which astronomers pointed out to him, between the Julian year and the actual solar year. The Julian mistake meant that there had been an accumulation of 11 minutes and 14 seconds, every year. Such a fraction looks like a trifle. But in a thousand years it takes on significance. By 1582 the calen-

*Wilson, P. W., *The Romance of the Calendar*, p. 238.

dar had accumulated 10 extra days. That year Pope Gregory ordered that 10 days he dropped by reckoning October 5 as October 15. By this regulation, the vernal equinox, which then happened on the 11th of March, was restored to the 21st, its correct date. He instituted the present rule for leap year. That was destined to make 1582 forever famous in calendar history. And thus it has come about that we no longer speak of our calendar as the Julian, but rather as the Gregorian. By this act of reform the hand of mighty Caesar had given way to the hand of a mightier Church. In this Gregorian honor, the name of Constantine the Great must not be forgotten. It was he who made Christianity a state religion when Rome was still a World Empire, and so left a guardian for the calendar Rome had established.

In Spain, Portugal, and a part of Italy, the reformed or Gregorian calendar was adopted at once. In France, the change took place at the end of the year, December 10 being moved forward to December 20, and in the low countries, December 15 became December 25. The Protestant element resisted this change to a considerable extent. To them, the change seemed like a surrender to the Pope. Greek Orthodox countries resisted even to the present century. So they continued the rule of the Caesars. Paradoxical it was, for they chose to follow pagan Caesar rather than Christian Gregory. But such protest was not a universal Protestant attitude. The adoption in Switzerland began in 1582; it was gradual and was not completed until 1812. But England held back for 170 years. By 1752 the Julian calendar was not 10 but 11 days out of tune with the sun in the heavens. The British Parliament made the grade then, however, and dropped 11 days by reckoning September 3 as September 14.

But the two Caesars, Julius and Augustus, Constantine, Mohammed, and Gregory XIII were not the only eminent contenders for calendar honors. Another and quite important change besides those mentioned had taken place almost silently and unnoticed. The name of a Jew had appeared in the list of the contenders for the calendar. Stranger still this was by no act of his own. Unlettered and provincial, in the general acceptance of those words, the name of this Galilean carpenter had not only challenged the name of the great Caesar, but in the end was destined to supersede it. The Jewish calendar in the days of the Caesars reckoned time from a seemingly sure foundation, that of the creation of the world. But since science has pushed back the creation of our world to millions of years, and even the existence of civilization to thousands of years before the date recorded by the Jews for the creation of man, the term "from the creation of the world" becomes an exceedingly unstable and untenable point from which to base the reckoning of time. The Julian calendar reckoned its years from A. U. C., "the building of the city," that is, the founding of Rome on the Tiber. There were also sub-reckonings as "In the year of the reign" of an

emperor, king, or pope, or "in the year of the consulate." Time was also counted from the Olympiads and from the Indiction (tax periods). But emperors perished. Consulates were abolished. Olympiads and Indiction periods failed to carry importance. Rome fell. When civilization emerged after 500 years of so-called "Dark Ages," the calendar of time no longer carried the famous A. U. C. but the new A. D. No longer was time being reckoned from the building of the city, but from the birth of a Galilean Jew. Time before His birth was being counted as B. C.—"Before Christ," and after His birth as A. D.—"In the Year of Our Lord." And so it is today. My Hebrew Bible bears the date of 5677, but also the date 1917, and these dates stand side by side, 5677—1917, from the creation of the world and from the birth of Christ!

How did it happen that a crucified Galilean, who never in His life wrote a line, yet in His death wrote His name across the calendar of time? How does it happen that now, nearly 2,000 years after His death, the civilized world, irrespective of race, religion, or nationality dates all official documents from the year of His birth?

Research has not fully uncovered the answer. It certainly did not come about by fiat of any emperor or pope. Constantine might have ordained that time be reckoned from the birth of Christ; instead he instituted the Indiction periods. The legend runs: "In the year of the Indiction of the Emperor Constantine." In A. D. 37, the Emperor Justinian issued a decree directing that all public documents should be dated by the year of the emperor, the name of the consul, and the Indiction then current. Only four years after that the last consul was elected. The office and the man alike became shadows. The Moslem almanac drawn up by Calif Omar, A. D. 640, counting time from the Hegira A. D. 622, has prevailed among the followers of Mohammed for over 1200 years. In 1927 the Turkey of Mustapha Kemal Pasha swept the Moslem almanac into the discard and adopted the Gregorian calendar, basing time from the birth of Christ. Just how the name of the Nazarene came to dominate the calendar of the world's civilization may never be discovered. But at least we know it was by a process of natural evolution. There are certain signs along the way. They had a beginning by the Third Century.

In A. D. 222 Hippolytus, schismatic Bishop of Rome, historian, liturgist, saint, and martyr, began to compute Easter tables. Excavations in Rome in A. D. 1551 brought to light a statue of Hippolytus which is preserved in the Lateran Museum in Rome. On one side is inscribed an Easter Canon he computed, and on the other is a partial list of his works. It was Hippolytus who argued that December 25 was the actual date of Christ's birth, and who has left the fullest early account we possess of the Eucharist. He emblazoned the name of Christ on the whole of the Third Century.

In A. D. 312 Constantine was converted to Christianity. He stamped the

cross—("Hoc vinces," by this conquer)—on the institutions and literature of his time. Further, as already noted, he placed the 7-day week with its Christian Sunday as well as Jewish Sabbath in the remodeled Julian year.

In A. D. 532 Dionysius Exiguus, a learned monk and astronomer, familiarly known as "Denys the Little," began in his Easter tables to count "ab incarnatione domini." It matters not that both Hippolytus and Denys the Little made many errors in their computations; it is significant that the latter began counting "from the incarnation of Our Lord," and that the former insisted on a definite date for the birth and incarnation.

In A. D. 748 we have the first known instance of dating according to the Christian Era. In 879 King Charles III of Germany was the first to add "in the year of Our Lord" to his reign. In 1219 we have the earliest known use of the actual phrase "Anno Domini." Three hundred years later "The Year of Our Lord" was rapidly becoming a universal designation for the calendar. Not the creation of the world, not the flight from Mecca, not the founding of the city of Rome, not the throne of Augustus, not even the sign to Constantine in the heavens, but the birth of a Babe in a Bethlehem manger had conquered the calendar of time!

Other contenders for calendar honors were yet to come. The Gregorian calendar, wide as had become its influence, was not yet to be taken for granted. A vital protest was to be made against everything Christianity stood for in a calendar based on human reason.

This new calendar had its birth in the French Revolution. On October 5, 1793, the almanac of reason was formulated as the death knell to Church and State and aristocracy. It replaced the Gregorian calendar. It put on the guillotine "The Year of Our Lord," and raised to a throne "In the Year of the Republic." The new almanac was antedated to September 22, 1792, so that the first day of the new Republic in France became New Year's Day. The year was based on 365 days, divided into 12 months of 30 days each, and the month into 10-day weeks, the tenth being a rest day.

The five left over days which Egypt had named for her deities were given in honor of Revolutionary leaders, and devoted to Virtue, Genius, Labor, Opinion, and Reward. Leap-Year Day was designated the Festival of the Revolution. The making of the new calendar was assigned to Charles Gilbert Romme, President of the Committee on Public Instruction, who was aided by the mathematicians, Gaspard Monge and Joseph Louis Lagrange, and the poet Fabre d'Eglantine. The latter renamed the 12 months for seasonal events, as January, "Nivose," snowmonth, February, "Pluviose," rainy-month, and so on to December, the freezing-month. This calendar of protest, which the new Republic hoped would sweep the world, lasted only 13 years, when the Gregorian calendar was reinstated by Napoleon in 1806. Napoleon's act was significant. His sword failed to con-

quer the world, but the Gregorian calendar he reinstated for France was destined to make the conquest which for his empire was a forlorn hope.

Japan adopted the Gregorian calendar in 1873, and the Republic of China in 1912. The Russian Revolutionists hated the Church and its priests no less than did the French Revolutionists. Yet one of the first acts of the Soviet Republic in the terrible year of 1918 was to adopt the Gregorian calendar. The Balkan States and Greece, where the Greek Orthodox Church holds sway and which "has no dealings" with the Pope of Rome, were among the last to change their Julian calendars to the Gregorian. The change was effected in 1916 and 1923.

But France had yet other contributors to calendar reform. Pierre Simon Laplace (1749-1827) must not be overlooked as a calendar contender. Laplace, greatest of French astronomers, attempted to do by "science" what the French Republic had failed to do by "reason." Disdaining the linking of chronology with trivial events and vanishing names of earthly history, he proposed hitching the calendar of time to the stars in the heavens. He pointed out that the major axis of the earth's orbit coincided with the line of the equinoxes some 4,000 years before Christ. In A. D. 1250 they were at right angles to each other. Here, he argued, was a majestic inviolable event to which all human calendars should be adjusted —that moment at which the line of the equinoxes is at right angles to the axis of the earth's orbit. But in spite of the fact that Laplace made great contributions to astronomy, and that he became a senator and chancellor, was made a marquis, and was elected to the French Academy, he never succeeded in getting favorable consideration for his proposed calendar adjustment.

Yet the Gregorian calendar, thoroughly intrenched as it is, as the universal clock of Time, needs reformation as much as did the Julian calendar in 1582, though not on similar lines. The success in securing universal usage for the Gregorian calendar has been because of its accuracy and its competency. But it does need further simplification to meet the needs of our complex civilization. This need is seen especially in a better uniformity of the days in the month and in a fixed date for Easter.

In 1834 Rome had another contender. An Italian priest, Marco Mastrofini, published a book at Rome entitled *Amplissimi frutti da raccogliersi sul calendario gregoriano perpetuo,* in which he proposed the following: a year of 364 days, beginning on Sunday, January 1, and ending with a 365th, extra-calendrical day, to be called, if the Church so decided, *feria octava.* In leap years the other extra day would be placed either after February, as in the Gregorian calendar, or after the *feria octava;* and this day would be called simply the *intercalary day.* Easter by this arrangement was automatically limited to five Sundays of definite date—on one of which it might eventually be fixed permanently. The only detail in which

Mastrofini did not anticipate *The World Calendar* was in regularizing the length of the months and making the quarters equal. Mastrofini originated the basic idea of all modern reform, the "stabilizing" day.

Two contenders for such reform have seized the imagination of our day.

In 1849 the brilliant French philosopher, Auguste Comte, produced a calendar which was a most valuable contribution to calendar reform. It has been called, from the name given to his philosophy based on the ideal of symmetry, "Positivist." But it is better known, from its distinction of adding an extra month, as the "13-month calendar." Comte, unhampered by tradition, took a 364-day year divided into 13 months of 28 days each. This left an additional day which he called "Year Day," and made a sort of "All Souls Day" of it by consecrating it to "All The Dead." His Leap Day he consecrated to "Eminent Women." The months he renamed for protagonists of world history from Moses, Aristotle, St. Paul, and Shakespeare to Descartes and Bichat. To the weeks he gave 52 names of others he considered nearly as or equally great, including Buddha, Socrates, Plato, St. Augustine, Galileo, and Newton. His "Positivist Year" looks like a calendar of secular saints. It had effective promotion in the United States through the munificence of George Eastman of Rochester.

The other and final contender, to be mentioned in this article, is a woman, who has been happily christened by one organization, "The Calendar Lady." England's Elizabeth was a 16th Century woman whose rare diplomacy steered her country through treacherous shoals to a victorious haven. Achilles was dubbed "the bravest of the Greeks." It will require both diplomacy and courage to reform the thoroughly entrenched Gregorian calendar. Elisabeth Achelis, President of The World Calendar Association, and promoter of The World Calendar equal-quarter plan, has shown herself possessed of both these rare qualities. For a decade she has been going from court to court (as once went Columbus with his maps and charts) laying the ground for universal adoption of a permanent, unchanging calendar.

It is significant that calendar reform has been taken up by a woman and utterly fitting that it should be an American woman. American women have been leaders in reform and educational movements from Anne Hutchinson, "the Woman Unafraid," of colonial pioneer days and her successors; Lucretia Mott, abolitionist, feminist; Sophia Smith, philanthropist, patron of education; and Mary Lyon, pioneer in the education of women; to that remarkable group of 19th Century women, including Lucy Stone, feminist leader; Susan B. Anthony, woman's suffrage leader, who changed the thought of America about women; Clara Barton of Red Cross fame; Louisa May Alcott, daughter of the famous educator, Bronson Alcott, some of whose educational reform ideas breathe in Louisa May's *Little Women, Little Men, Jo's Children,* and whose face adorns the new literary series

five-cent stamp; and Frances E. Willard, first woman college president in all history, who permeated reform with educational methods, and whose face adorns the new educational series five-cent stamp. Jane Addams, whose face also is on the ten-cent stamp in the new scientific series, and many other later educational and reform leaders will instantly come to mind as belonging in this list. Elisabeth Achelis has earned a place in any such grouping. Already she has elicited the support of ecclesiastics, statesmen, philosophers, scientists, litterateurs, laborites, business men and editors in her reform.

Miss Achelis makes no claim to having originated a new calendar. Hers has been the work of editor and promoter of the best plan that has yet been devised in reform of the present Gregorian system.

As the *Journal of Calendar Reform* is the official organ of The World Calendar Association, it would be gratuitous to do more than summarize the contribution of this "Lady of the Calendar."

The World Calendar like the "Positivist Calendar" is built on a 364-day year, but unlike it retains 12 months instead of using 13. Like the "Positivist Calendar," all years can be made to start on Sunday and end on Saturday, and a particular day of the month will always fall on the same day of the week; but unlike it, The World Calendar has the advantage of four equal quarters of 91 days each. The World Calendar changes are far fewer and less disturbing than those demanded by the "Positivist Calendar."

The World Calendar as compared with the Gregorian is just as accurate, much simpler, and more competent for business purposes. It equalizes the unequal quarters and the weekdays of the month of the Gregorian calendar. The unbalanced, unstable, and irregular arrangements of the Gregorian give way to the balanced structure, perpetual form, and harmonious arrangement of The World Calendar, and that without cataclysmic disturbance. The World Calendar is a consummation of the best thought of the 20th Century. It is a gleaning of the fruitage of calendar making of previous civilizations. What science has been doing in recreating the world, The World Calendar is doing in harmonizing time to a new step, not only for our day, but for long days to come. It takes the Gregorian calendar out of the horse and buggy age and recreates it for an age of the storage-batteries, airships and international good-will. International organizations in 31 different countries are agitating for this reform. The World Calendar appeals to Hebrew, Catholic, Orthodox and Protestant. The League of Nations has it under favorable consideration. Each new sunrise brings new pressure and new hope for its soon adoption as the next great step for an advancing civilization.

THE CAMERA AND THE CALENDAR

By Sophie Delar

Official Photographer, Rockfeller Center

THERE is a definite kinship between the camera and the calendar. The shortening and lengthening of the rays of the sun, accompanying the seasons, are only one of the bonds that link them together. Modern astronomy would be all but helpless without the camera to gaze steadily and unimaginatively through the telescope at the heavens and then record what it has seen for the scientist's closer study. And without astronomy, there would be no record of the course of the earth around the sun upon which the calendar is based.

Taking a photograph by natural light during June or July is different than December. The sun has marched south; its rays are longer, hence less bright. The camera stops must be adjusted; the shutter fixed to open and close more slowly, the aperture widened to admit more light. All time is measured by light, and without light there can be no photography.

In spring, during the months of March and April, the land is filled with young men and women looking forward to commencement day, to their graduations. To commemorate the event, the schools and colleges issue the traditional yearbook, adorned with individual pictures of those who receive diplomas as well as photos of clubs and athletic teams. This calls for a camera—for hundreds of cameras. Studios spring up on the campuses of the country and processions of cap and gown wearers file before the lens. Thousands travel to New York and other cities during the Easter vacation, to enjoy the holiday, but principally to have a look at the "birdie."

In spring, too, some of the society buds make their debuts. And what is a debutante without a photo of her ravishing self? So to the studios they troop to be pictured in all their flowers and finery. May and early June also bring out the rash of pardonable vanity in the lovelorn—the soon-to-be wed, the vast number who for some reason believe June is the only correct month in which to marry.

To the commercial photographer, this crush of business in three months brings an agony of dawn to dark labor. If he could change the calendar to suit his needs, he would double the number of days in each of the spring months. He would make it illegal to marry in June and stagger the commencements so that they would be equally divided among all the months of the year. Alas, that is only a dream, never to be realized—in my lifetime.

The reform of the calendar, as envisaged in The World Calendar, is one well within the realm of probability, and I, with other of my craft, am grateful for the efforts being made on its behalf. It is a quick and definite

help in our accounting. And, inasmuch as we deal constantly in dates and commemorative functions, we would find it immensely helpful as a simplification and regularization of the passage of the days.

For, bear in mind there is no anniversary which takes place without having as a sort of thirteenth guest the man with the lens. The guest of honor must be photographed to mark the day. The guests around the festive board must be similarly honored. Reunions, celebrations, sentimental occasions of all kinds, dates upon dates, days upon days, all of them require the immortality of the photographic plate.

Spring and the midsummer months of July, August, and September are notable as the season of the amateur camera fiend. All outdoors beckons and with lenses bare he pursues the lissom bather and the cloud-bosomy landscape. Today, there are more of his kind than at any time in history, thanks to the miniature cameras with lenses powerful enough to take photos in weak light and under difficult conditions.

The amateur is a watcher of the heavens, even as were the old astronomers and calendar-makers. He knows of the north to south and south to north travels of the sun and sets his camera accordingly, stopping it down to a pinpoint to allow for the glare of the August sun. He is a student of light and he figures into his total of factors the expanse of blinding snow that covers the ground in January, the great dome of blue sky that canopies the pair of canoers on the dark, forested lake in midsummer.

Slung on a strap about his neck, he carries an instrument which merits a place in any discourse on the calendar—the exposure meter. This, if you please, is a device for measuring light as accurate and scientifically correct as any other chronicled by writers on the calendar—the sun-dials, watches, and clocks, and a dozen different astronomical instruments. Using a photoelectric cell it measures for the camera the light on his subject and the needle on its small dial registers its figure regardless of clocks or seasons.

The watch you carry in your pocket is, after all, an arbitrary recorder. We could have an arrangement of 20 seconds to the minute or 100 minutes to the hour or any other you might devise and still have a day that accounted for the revolution of the earth. Its tick-tock tallies with the passage of the day, but not exactly. Only four times during the year does your watch, however accurate, stand at 12 o'clock when the sun is at the meridian. The exposure meter and the camera, however, are more precise. They deal with light, not with numbers.

As a matter of fact, the photographer, to function properly, must have three instruments: first, the exposure meter, to measure the finer nuances of light; second, the watch, for periods of one minute up to 24 hours; third, the calendar for the days, months, and years, for the seasons, and the phases of the moon. I could conceive of some genuis inventing a calendar in which the three instruments were combined in one final, perfect mecha-

nism for recording not only light as it passes but also its quality and depth.

My imaginary mechanism would be able to record intervals of time as little as 1/50,000th of a second up to the long stretches of months and years as recorded in the calendar. Such an instrument would be the first instrument that recorded all of time, down to the tiny fragments of a second. With it, the photographer would be able to use the merest flashes of darting light to reveal nuances of movement never seen before.

At 1/50,000th of a second we are in a weird and beautiful world of bewildering industrial and scientific possibilities, and as yet unexplored. With your naked eye watch a man hit a golf ball. The club seems to spoon the sphere upwards. Snap it with an ordinary camera at say 1/100th of a second and what have you? The clubhead and ball lie companionably side by side. But at ultra high speed, what do we see? For the first time, we behold what actually has taken place. There is a dent in the ball where the iron struck, a large dent that remained an inconceivably brief instant and filled out again. This is a revelation made possible by light and time. It is not a rare phenomenon. It happens daily, hourly. We simply do not see it because our eyes, unaided, are not equal to the task. But it is nevertheless real. It suggests a day in the future when the camera will be an adjunct of daily life, in everybody's hand, on everybody's table, as essential to a satisfying life as it is to the astronomer beneath his colossal lens.

With ultra rapid camera in hand, we will be equipped with a stupendous magnifying glass that will not only demonstrate the quality of materials but also will fix and analyze movements. It will be a strange world, perhaps an interesting one. Personally, I don't want to be there.

I think a lazy life where a camera is set on the back porch, opened up wide, and left there for half an hour, more or less, to take a picture of the sea by the light of a crescent moon, is more pleasant.

At some of the agricultural experiment stations cameras have been focused for months on growing plants—and produced some of the most beautiful motion pictures I have ever seen. Now, television is here and I think it will bring in an era of lengthy photographing of news events. The newsreel men are handicapped by the brevity of their reels and the multiplicity of subject matter. For the moment at least, television will have to depend on news for the bulk of its subject matter. Which I think is an excellent idea, better by far than much of the so-called humor now being exposed to the air waves. We may see hours of news photography.

Fifty or 100 years from now, people will be sitting before their television sets and stare at a motion picture of the earth on which they are living. Some man will go up in a rocket and photograph the earth from a distance of a thousand miles or more, or less, and we shall see ourselves as others see us, but what is more important here and now, we will have visual proof of what the calendar has taught us these thousands of years.

200 YEARS IN RUSSIA

By Dr. Vera Rossovskaja

Astronomer, Research Institute, Leningrad

(Translated and abridged by The Reverend M. A. de Sherbinin, from Chapter XII in *The Remote Past of the Calendar,* published in Leningrad, 1936.)

UP to the end of the 15th Century, the Russian year began on the first of March. Years were counted from the "creation of the world," and this event was placed in the year 5509 B.C.

From the end of the 15th Century to 1700 the Moscow kingdom took up the reckoning of time in September-years, that is, the year began with the first of September. It was only Peter the First who, about 1700, introduced the reckoning of years from January 1, as well as the *Anno Domini era,* that is from the birth of Christ; in doing this, he encountered churchly opposition.

Discrepancy between the Byzantine Easter and the sun did not greatly inconvenience the Russian Church at this time. But the reform adopted by Pope Gregory XIII could not pass unobserved. To discuss the Pope's proposal for a new style of calendar, Jeremiah, Patriarch of Constantinople, called together in 1583 an ecumenical council, which recognized the error of the old Julian calendar, but did not approve the new, giving preference to the Julian style for fixing the date of Easter. The same opinion was expressed in the answer given to Pope Gregory by the Churches of Russia, Venice, Greece, and Armenia. The letters of Patriarch Jeremiah of Constantinople and of Silvester of Alexandria still exist. They brand the Gregorian reform as "a harmful innovation of the Church of Rome, a Latin heresy and a fiction of Roman star-gazers," and this was followed with ecclesiastical arguments and scientific theories. In general, however, the obvious reason for the decision was that "it is better to be wrong with the sun than right with the Pope." So, under the pressure of the Eastern Church, the new calendar was rejected.

We have already stated that the error of the Julian calendar was seen in the Eastern Church even before it was in the West. But discussion of the need of correction touched only the question of Easter. The bold and daring thought of reforming the entire Julian calendar never arose in the minds of even the boldest theologians of Russia. It is therefore probable that reform of the calendar would have been rejected even if it had not originated with the Pope of Rome.

Civic reckoning of time began in Russia about the 17th Century. This was when calendars in book form began to appear. The first Russian calendar extant in manuscript is dated 1670, during the reign of Alexis Michaelovich.* The first printed calendar appeared in Amsterdam

*Tsar Alexis Michaelovich was the father of Peter the Great.

in 1702. In Russia the first printed calendar came in 1709. Its contents were very simple: sunrise and sunset, phases of the moon, a list of holidays, and a mass of matter on the household, the farm, and medical care.

This publication was followed in the year 1709 by "The Bruce Calendar."

James William Bruce (Russian name: Yacob Williamovich) was a statesman and friend of Peter the Great. His father had been banished from England by Oliver Cromwell and had entered the Russian Civil Service, being greatly favored by Peter the Great. Young Bruce showed a great love for learning, especially astronomy. The Tsar bought him a telescope, and Bruce's astronomical observations made him a leader in all scientific enterprises of the State.

It was in 1709 that he turned his attention to creating a calendar which remained for a long time a model for all similar works. The text was etched on copper and printed on six wooden boards or paper sheets. Bruce supervised the work, which was done mainly by the royal librarians, Basil Kiprianov and Alexis Rostovtseff. The title page says: "This new table shows the entrance of the sun into the region of the 12 zodiacs; also the rising and setting of the sun on the present horizon, as well as beyond this horizon." The second page is a church calendar, with data of feasts and holidays. The third page contains "foretokens or prognostications of time for every day according to planets." These "foretokens," ascribed to Bruce himself, left the memory of him as a wizard and an occult scientist.

On the fourth page is the inscription: "Foretokens of happenings for every day according to the course of the moon and sun," including information regarding favorable times to undergo bleeding, to pay a debt, to sue someone, to fix nuptials, and so on. On page 5, the portrait of Peter the Great is surrounded by the signs of the zodiac and allegorical figures of planets and seasons; while page 6 contains an explanation of all the preceding parts of the calendar.

More than 125 years before, in 1582, the Gregorian calendar had been adopted in many parts of western Europe. Russia continued with the Julian system.

As the political and private life of the country became developed, as commercial exchange arose with other countries, and as an exchange of scientific relations grew, the two calendars had to collide. Russia had to recognize willy-nilly the existence and even the preeminence of the Gregorian system.

It was in the 19th Century that this ambiguity in reckoning of time began to penalize Russia. The Department of Foreign Affairs had to use the Gregorian style in relations with foreign countries. The commercial and naval fleets were also obliged to reckon time according to the Western

calendar, and now those sciences which had a world character—such as astronomy and meteorology—were forced to adopt the Gregorian system. Finland and Poland had long ago accepted the new style, but Tsarist Russia was still obstinate and would not admit that the reform of the calendar had become an urgent necessity.

Still the fact remained that reform was inevitable. The question arose continually. So from time to time projects were discussed for adoption of the Gregorian style; and the Tsarist Government had to repeat its decision over and over.

In 1829 the Department of Public Instruction handed its recommendation for calendar revision to the Academy of Science. The Academy of Science petitioned the Government to accept the Gregorian calendar. But Prince Lieven, in submitting the project to Tsar Nicolas I, branded the proposal as "premature, unnecessary, and likely to produce upheavals, and bewilderment of mind and conscience among the people." He declared that "the advantage from a reform of this kind will be very small and immaterial, while the inconveniences and difficulties will be unavoidable and great." The Tsar was frightened and wrote on the report: "The comments of Prince Lieven are accurate and just."

Russia continued to live according to the old calendar. In 1860 the Berlin Astronomical Association approached the Russian Government to urge adoption of the Gregorian calendar. Its proposal was handed to the Church for decision, and once more science and religion were in conflict. Filaret, Metropolitan Archbishop, put his ban on "the calendar of Rome."

In 1864 Professor Medler of Dorpat University made an adroit suggestion for a compromise. He proposed that Russia introduce into the Julian calendar a correction which he had specially drafted for the countries of the East. He proposed to readjust the year, and then drop one leap year from the Julian calendar every 128 years, which would give a scientifically accurate calendar, and would have no relation to the "Latin heresy." At the same time the discrepancy with the Gregorian calendar would be very slight. However, Medler's project, in spite of its scientific merits, was turned down.

At last in 1899 a commission on calendar reform was chosen by the Russian Astronomical Society. The commission had official character and included representatives of all departments and ministries. D. E. Mendeleyeff was its active chairman. At its opening session, the commission definitely decided not to accept the Gregorian calendar—not because of its Roman origin, but because "the length of the Gregorian year equals 365.2425 days, and differs from the solar length by 0.003* fraction of a day, and such error in the light of the present condition of science cannot be tolerated." It was resolved to "unreservedly decide upon a reform

*EDITOR'S NOTE: This is evidently a typographical error, since this fraction should read 0.0003.

which would embrace all possible correctness in the light of science and history."

The first question in discussing the error of the Julian reckoning was to establish the length of the tropical year. Up to this time, Russian scientists had used the definitions of Hansen and Leverier. Now Mendeleyeff demanded more correct data. Accordingly, he wrote to the renowned American astronomer, Simon Newcomb in Washington, asking him for complete explanations regarding this subject, with the latest authoritative definitions of Newcomb himself. Newcomb answered promptly and fully, giving a detailed exposition of the question. He also sent a table, written in his own hand, of the variations or changes to which the length of the tropical year is subject in the course of centuries.

The commission was faced with two problems: (1) to correct the error grown in the course of time; and (2) to introduce into the calendar a corrective for avoiding error in the future.

For correction of future error the commission took up Medler's project, that is, to omit one leap year in every 128 years of the calendar, this being the correction which affords the greatest precision and the greatest approach to scientific accuracy.

In order to correct the accumulated error of the Julian calendar, it was necessary to drop 12 days from the reckoning. Here Mendeleyeff found himself opposed by Church and Synod. He argued that the reform was purely of civic character and that the Church could have all jurisdiction over its feasts and festivals. The battle raged on and on, without advantage to either side.

Meanwhile the commission began to study proposals for more sweeping calendar changes. Auguste Comte's 13-month year was discussed, as was de Petenyi's scheme for the decimalization of the year. Next came the project of the French astronomer, Armelin, being the result of researches by the French Astronomical Society, proposing to divide the year into four quarters of three months each, a proposal similar to that which was later to become world-renowned under the title "World Calendar."

The commission was approaching the conclusion of its labors, when one afternoon an imperial writ was served upon its chairman, transferring its activities to the Academy of Science. The nature of the procedure made it clear that the commission of the Astronomical Society must be dissolved. The purpose was to stop the work of the commission which had evidently reached certain conclusions not agreeable to the Government. Mendeleyeff protested, and declared that he saw no reason why both the Academy of Science and the Astronomical Society should not simultaneously study the subject of calendar reform.

So his commission continued its work. But most of its members, who represented government departments, gradually gave up attending the

sessions. Within a few months Mendeleyeff was compelled to capitulate, and the commission accordingly closed its activity.

Meanwhile the calendar reform work of the Academy of Science had been clearly limited by a royal letter informing them that they were to take as their guidance the remarks of Prince Lieven's report to Nicolas I. These instructions operated as a clear prohibition of any calendar reform.

A wave of protest and indignation rolled over the country, particularly from the universities, which regarded the whole affair as a personal affront to Mendeleyeff, particularly as it was accompanied by failure to elect the eminent Professor to membership in the Academy. The huge public protest was comparable to a similar display of public opinion which met the excommunication of Leo Tolstoy, who happened in this instance to share the views of Mendeleyeff in regard to the need for calendar reform. "It is obvious," Tolstoy wrote, "that the eloquent demand of our century and of modern life will not stop before any difficulties, and therefore undoubtedly a practical solution of the calendar question is near."

The Calendar Reform Committee of the Academy of Science held its first meeting in 1900. No further session was held until 1906, when the main business was the appointment of a subcommittee "for current labors." A third session was to have been held in the following year to receive the report of the subcommittee, but it never materialized.

Calendar reform had been effectually stifled. Not a single voice was raised in its behalf, except that of mathematical Professor Markof, who annually annoyed the Academy of Science with a resolution demanding a "progress report" from its Calendar Committee. In 1918, after the Revolution and the complete separation of Church and State, Lenin raised the question of calendar reform, and after a brief investigation of the subject, published a decree directing the adoption of the Gregorian style, "for the purpose of being in harmony with all the civilized countries of the world."

The introduction of the Gregorian calendar, however, does not assume that the question of calendar reform is permanently settled in Russia.

OBITUARY NOTES

DR. JOHN H. FINLEY, Editor Emeritus of *The New York Times*, died on March 7, at the age of 76. By his death calendar reform loses a valued friend. His interest in calendar reform was shown in many fine editorials on the subject which appeared in *The New York Times*.

DR. TSAI YUAN-PEI, Chinese elder statesman, educator and publicist, died on March 5 in Hong Kong. He was the president of the Academica Sinica, which promoted scientific research. Actively interested in calendar reform, he had been a member of The World Calendar Association since 1936.

Other deaths among the membership of The World Calendar Association include: *Prof. Ingo Hackh*, Professor of Chemistry, College of Physicians and Surgeons, San Francisco; *Rev. W. J. Johnstone*, St. Paul.

CURRENT PRESS COMMENT

Calendar Exhibit

Nashville (Tenn.) Banner

The World Calendar plan is being studied seriously throughout the world. It is visualized—in an exhibit in the New York Museum of Science and Industry in Rockefeller Center, New York City, where a great many persons are furnished an opportunity to obtain a sort of bird's-eye-view of how men have reckoned time through the ages. They behold the defects in the existing "horse-and-buggy" arrangements for the measuring of time, and other more recent arbitrary adjustments of the Julian calendar which were partly amended by the Gregorian calendar, when George Washington was a young man.

The calendar can be made to conform to a 12-month equal-quarter plan of revision, which meets the approval of thoughtful persons who have studied this subject. Fourteen governments in different parts of the world have approved The World Calendar plan. It rearranges the length of the familiar 12 months, equalizes the quarters and makes the calendar perpetual, every year the same. The first month of every quarter has 31 days, and the other two months, 30 days. Every quarter begins on Sunday and every year also begins on Sunday, January 1. The World Calendar harmonizes with the solar year and its four seasons, by adding an extra Saturday at the end of every year and an extra Saturday in leap years. It all makes sense, which is why sensible persons are convinced that it should be put into world use.

Islamic Calendar Difficulties

New York Nautical Gazette

Shortly after the war in Europe began, the Indian Government issued a warning to pilgrims who intended to make the annual trip to Mecca and Medina that there would be no sailings from Indian ports to Jeddah. That was a blow, indeed, to the devout who planned on being at the holy sites on January 19, 1940. To some Occidentals this interference may have appeared to be of minor import but to the fortunate ones of India's 70,000,000 Moslems who were bent on this holy journey, it was straight exclusion by non-believers. The British administrators were quick to realize that these followers of the Prophet were entitled to consideration. This war is a long way off and reasons for the conflict must be very vague to the lower castes in India. So, the word came from London that the water transportation for the pilgrims would be resumed and they could be at the scene of the Hegira at the appointed time.

The maintenance of shipping services for the thousands who make this sacred journey must be difficult for vessel owners because of the Islamic calendar. Though it has 12 months which have alternate 29 and 30 days, it is based on the lunar system. There is a deficiency in the Moslem year of about 11½ days as compared to the solar year which our Gregorian calendar uses. As the Mohammedans began their reckoning from the Hegira in 622 A.D., this year is 1359. Seasons mean nothing and in approximately 32 years a holy day works itself around the whole circle of the solar year. There are further complications in India because 14 other important calendars are extant in addition to the Gregorian, Mohammedan and Jewish systems. The Government of India is charged with the responsibility of preparing each year an enormous almanac so that seasons, festivals, and holidays can be determined and coordinated with historical dates. In these arbitrary cycles, the Moslem period of mourning falls in certain years at the very time the Hindus are celebrating feast-days.

The doctrine of estoppel runs against those of us who would set up the solar system as a perfect achievement. Our calendar contains many inconsistencies but some day it may be rectified with the adoption of The World Calendar. The British shipowners who provide the transport services for the Islamic zealots from India to the Red Sea port can arrange sailing dates with exactitude. But the American transportation companies now have a confusing and divided problem for our Thanksgiving celebrations. Who knows where it will be this year? We hope on a Monday.

EXCERPTS AND REVIEWS

The Year 1940

By Dr. B. F. Yanney

Professor of Mathematics, Wooster College

THE calendar for the year 1940 is exactly the same as that of the year 1912. As is well known, there are seven patterns of leap-year calendars, each beginning on a different day of the week. The one for the new year begins on the day of the week known as Monday. Since a leap year has one more day than a common year, and since a common year ends on the same day of the week as the one on which it begins, this year will end on a Tuesday. It is thus seen that the year following a leap year will begin two days later in the sequence of days of the week than the day on which the leap year began. This fact, however, only partially explains why any given leap-year calendar is repeated within a century every 28 years. Our calendar system is all very complicated, and one wonders at every recurrence of a new year why a simpler system was not adopted years ago.

The idea of leap year is of long standing. Even before the time of Julius Caesar calendar-makers busied themselves with plans for fitting the extra day of such a year into the standard yearly calendar so as to disturb the general system as little as possible. Julius Caesar's device was one of the cleverest of which we have any record. To understand the full significance of this device it is necessary to be familiar with the Roman calendar system as Caesar with the aid of the Egyptian astronomer, Sosigenes, had planned it. There were three marked days in each month. These were the Calends, the Nones and the Ides. The other days of the months were designated by a peculiar system with reference to these three marked days. Each day of each month of the standard Julian calendar had its fixed designation. It was a perfect system, therefore, for a 365-day year. But how dispose of the extra day in a leap year? That was Caesar's problem. This was the way he did it: He repeated one of the days of the shortest month of the year, which was February. The day repeated was the sixth day before the Calends of March, and it was called *bissextilis*. And this device left the designations of the other days of the month unchanged. It is from this circumstance that the year of 366 days became known as the bissextile year, the old name for leap year.

It is hardly necessary, perhaps not even worth while, to call attention again to the defects of our calendar, which defects are accentuated by the way in which we today dispose of the extra day of leap year. For it should be noted that the present way of disposing of this extra day affects every one of the ten succeeding months of the year. Not only so, but it affects the calendar of every succeeding year. This fact alone should suffice to bring about a speedy reform of our calendar system so that we might have for our day and generation a calendar as perfectly simple as was the Julian calendar at the outset for the Roman day and generation.

People are becoming more and more conscious of the need for simplification of the calendar. The so-called World Calendar proposed by The World Calendar Association has definitely established itself as the one and only plan with promise of ultimate adoption. More countries are ready now than were ready at the end of last year to cooperate in the enterprise of calendar reform, and even among these are some countries that are engaged in war.

A Clarification

By Rev. Edward S. Schwegler, D.D., Buffalo

IN the *Journal of Calendar Reform* for the third quarter of 1939, pp. 142 *sqq.*, there is a contribution to the history of the calendar entitled "A Document from 1751." This, we are told, is a hitherto forgotten pamphlet, printed by Benjamin Franklin for the Society of Friends, and "constitutes the acceptance by the Quakers" of the Gregorian calendar.

Although the document is presented as a purely historical matter, it contains a passage which must certainly have been quite offensive to your Catholic readers,

and should not be allowed to pass without at least a footnote.

"The following ages of Popish superstition," says the passage, "not only indulged their proselytes in the use of such heathenish names and customs (i. e., the pagan names of the weekdays and months), but also invented and introduced other unsound and unscriptural practices in religion." First of all, our footnote will remark that "Popish" is an opprobrious epithet which no modern writer of good taste would use. Then, the footnote will point out that the popes were the greatest opponents of superstition throughout the Middle Ages, as may be proved by many papal documents. And finally, we will note that the Church never accepted the heathenish names for the days of the week. Right down to the present moment, the Church's nomenclature for the weekdays is as follows: *Dominica, feria secunda, tertia, quarta, quinta, sexta, sabbatum:* that is, Lord's Day, second weekday, third, fourth, fifth, sixth, sabbath. As for the pagan names of the months, it must be remembered that they were already sanctioned by immemorial use before the Church was ever founded. Churchmen probably connected February as little with Februa as we connect December with ten (decem). Nevertheless, it should not be forgotten that the Church's practice and teaching did in some cases produce different names for the months. Thus, among the Saxons, January became *Aefter-Yula*, or After Christmas; April was *Oster-Monat*, Easter Month.

There follows, in our objectionable passage, something that has no relation to calendar reform at all, and is quite typical of the anti-Catholic animus that characterized so many of our otherwise admirable colonists. "For when the profession of the Christian religion became national, multitudes of the heathen priests, whose interest lay in the performance of rites, ceremonies, and sacrifices, embraced prevailing Christianity with selfish views, and labored early with too much success to find employment for themselves by imposing on the people a new set of ceremonies and sacrifices, bearing some resemblance to those which in their former state of heathenism they had been accustomed to. From this corrupt source sprang the Popish (sic) sacrifice of the mass...."

On the contrary, the Christian priests were in continual opposition to the heathen priests, and the Church did all she possibly could to wean the people from paganism. For only one example, take the feast of the Circumcision, which the Church made a holy day of obligation in an attempt to counteract the revelries and excesses of the pagan New Year.

Then, to say that the sacrifice of the Mass had its origin in the corrupt practices of paganism is to display an ignorance of history. The origin of the Mass is the Last Supper, and the occasion of the Last Supper was the Jewish Pasch.

I hope these notes do not belabor points that are sufficiently obvious. I know that the document which occasions them was reprinted purely as an historical contribution. Yet I think its objectionable portions call for at least a brief refutation in the *Journal*. Otherwise, some fine day, you may find an uninformed scribe demonstrating from the *Journal of Calendar Reform*, Vol. IX, No. 3, p. 145, that "Popish superstition" drew from "corrupt sources" "heathenish names and customs," and "invented and introduced other unsound and unscriptural practices in religion."

"Time—Marches On!"

By John Temple Graves, II

In *Age Herald*, Birmingham, Ala.

WE are too timid about time as it marches on to dare any changes in its squad, platoon, company or battalion formations. But we are interested, and we note that the new World Calendar was endorsed by the General Federation of Women's Clubs at its national convention in San Francisco last May. The chairman of the Federation's committee on calendar reform, incidentally, is Mrs. Rowland H. Latham of Asheville, N. C. She presented the resolution. The proposed World Calendar would do much more, of course, than merely make certain holidays come always on Monday. Easter Sunday could come always on April 8, Ash Wednesday on February 22.

Proponents of this new calendar are working to have it adopted all over the world on December 31, 1944, as that is a time at which "natural transition" could take place.

FROM THE MAIL BAG

Future historians would thank us if we could place the dates so that the weekday and the month-day always came together. For example, if an historian finds the date September 13, he immediately knows that it was on Wednesday in the middle of the week. This might give a different interpretation to an event than would be given if the date were September 11, which he would know happened directly after a Sunday.—Dr. Dixon Ryan Fox, President, Union College, Schenectady, N. Y.

We congratulate you heartily, and wish all the members of your Association bodily and spiritual well-being in order to carry on your great work.—Leontios, Metropolitan of Paphos, Locum Tenens of the Archiepiscopal Throne of Cyprus.

I am interested in calendar reform.—Dr. G. Patterson, former Cuban Ambassador to the United States.

I assure you of my continued support in this great movement.—Mrs. Gustav Ketterer, Chairman, Department of Legislation, General Federation of Women's Clubs, Philadelphia.

Convinced that the proposed reform is timely and would prove beneficial.—John Crosby Brown, Pres., Tambly and Brown, Inc., N. Y. C.

It's a good idea to bring order out of confusion.—F. F. Flanagan, Pres., Penn Tobacco Co., Greenwich, Conn.

I believe that talk about World Federation will more than anything else—when peace comes—make likely and lasting a World Federation in Time.—Rabbi Martin M. Weitz, Kenosha, Wis.

One of the most valuable aspects of the public's mind is the real thought that is being given to post-war times. It is in this connection that calendar reform, in my opinion, can most profitably be introduced.—Lt.-Col. J. Murray Muir, Sec'y, Rational Calendar Association of Canada.

It is indeed a privilege to have a small part in the campaign to arouse interest among the masses in calendar reform.—Prof. A. M. Harding, Univ. of Arkansas.

Since my early childhood days in school the bane of my life has been the ever-conscious un-uniformity of recurring dates, days and months. Speed the day when your good work will bring some degree of order out of the present chaotic system of dates and dating.—Senator George A. Lovejoy, Seattle.

The advantages of The World Calendar are so obvious that I think the business men of America should, through their Chambers of Commerce and their representatives in Congress, see to its adoption at the earliest possible date.—M. J. Spinks, Methodist Hospital, Dallas.

As opportunity presents I shall continue to show to my fellow countrymen the merits of The World Calendar.—W. T. Hipps, Corsicana, Tex.

A good point in advocacy of this plan occurs to me. I am a constant user of devotional schedules. Find one limitation in their preparation because of the floating week with lack of correspondence of month and weekdays. It is impossible to select strictly appropriate subjects for Sundays and feast-days when the book is based on month-days to cover every year. —Rev. D. P. Acock, Clinton, S. C.

I am very much in favor of an improvement in the calendar and have found the magazine extremely interesting.—Willis Ogden Warren, Advertising, N. Y. C.

Heartily endorse the proposed new calendar.—Paul Cushman, Broker, N.Y.C.

I am strongly in favor of the proposed World Calendar and hope it may be possible very soon to get it adopted.—Rev. Edwin E. Giles, Norwich, England.

The Humanist Society of Friends has officially endorsed The World Calendar, and World Calendar dates will appear on their official minutes and other publications together with the traditional calendar dates.—L. H. Coate, Director of The Humanist Society of Friends, Los Angeles.

The World Calendar would meet the necessities of every walk of life. Its adoption would be evidence of true advancement in this world and would be as beneficial as "daylight saving." — Samuel R. Outerbridge, N. Y. C.

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